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LANDSAT-3 LAUNCH AND FLIGHT ACTIVATION EVALUATION REPORT 5 TO 9 MARCH 1978 LAUNCH THROUGH ORBIT 50 AND ORBIT ADJUST OPERATION

Prepared by
GE LANDSAT OPERATION CONTROL CENTER

For
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Goddard Space Flight Center
Greenbelt, Maryland 20771

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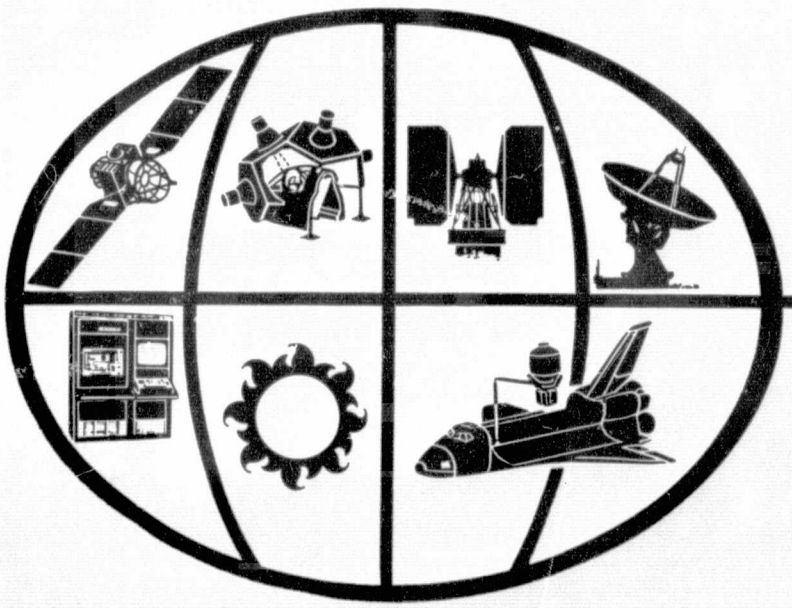

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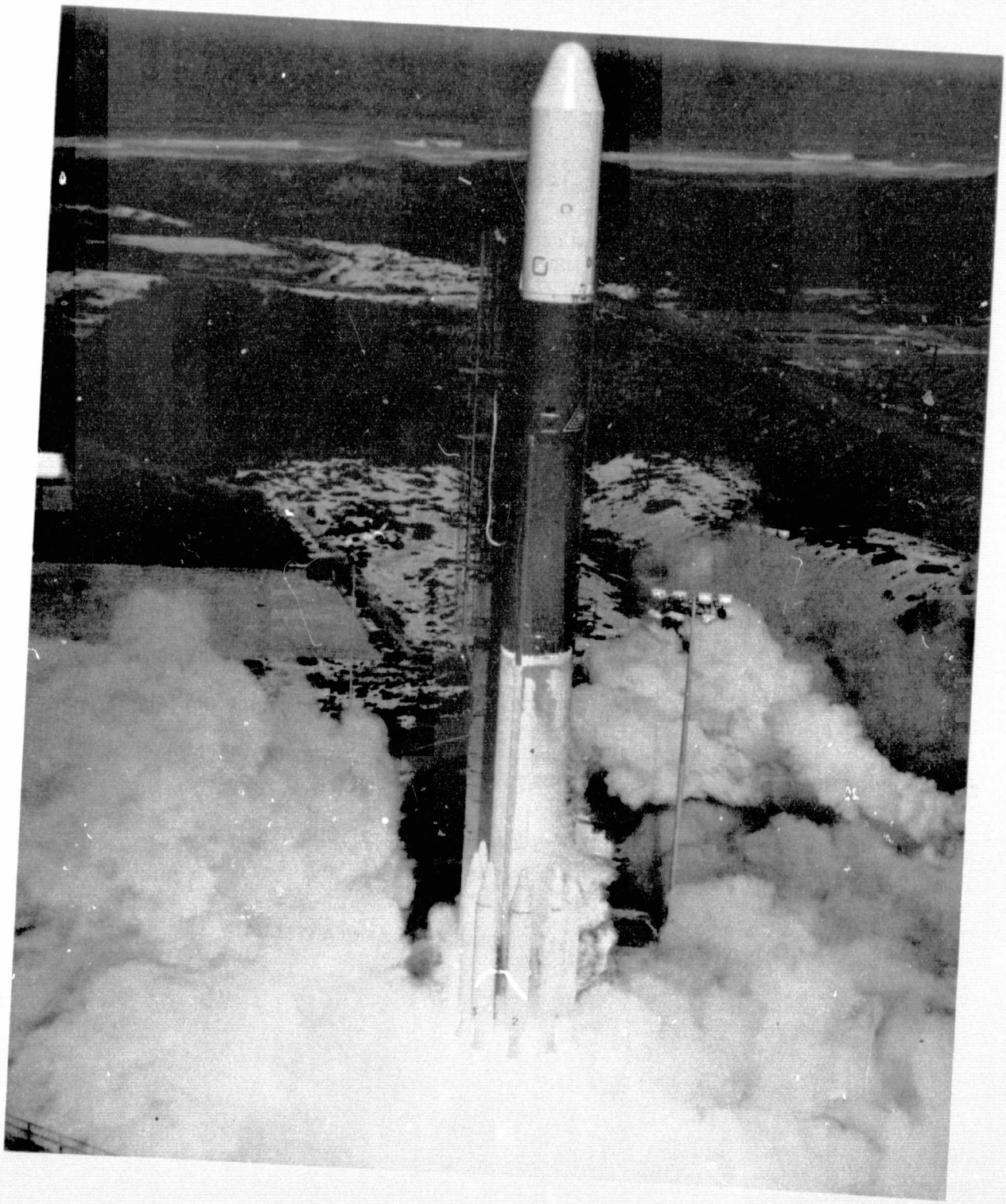

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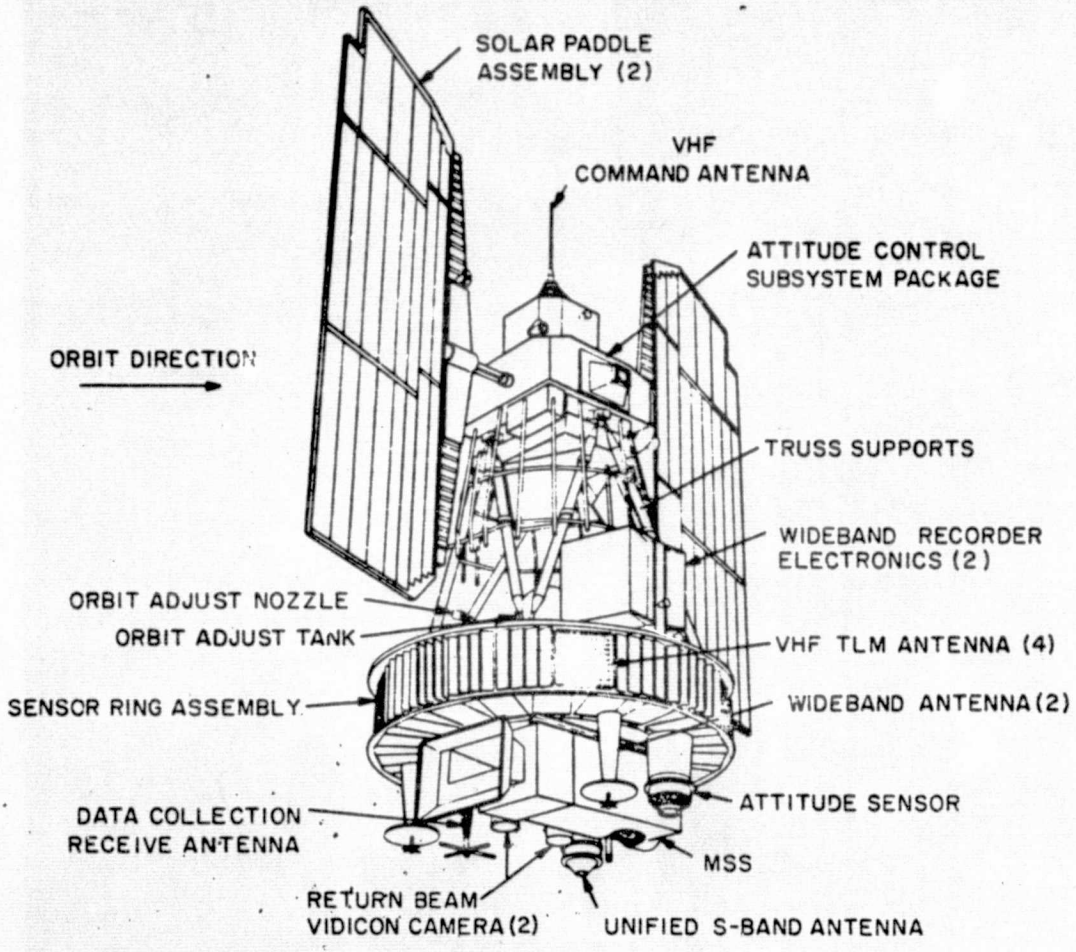

Landsat-3 Spacecraft

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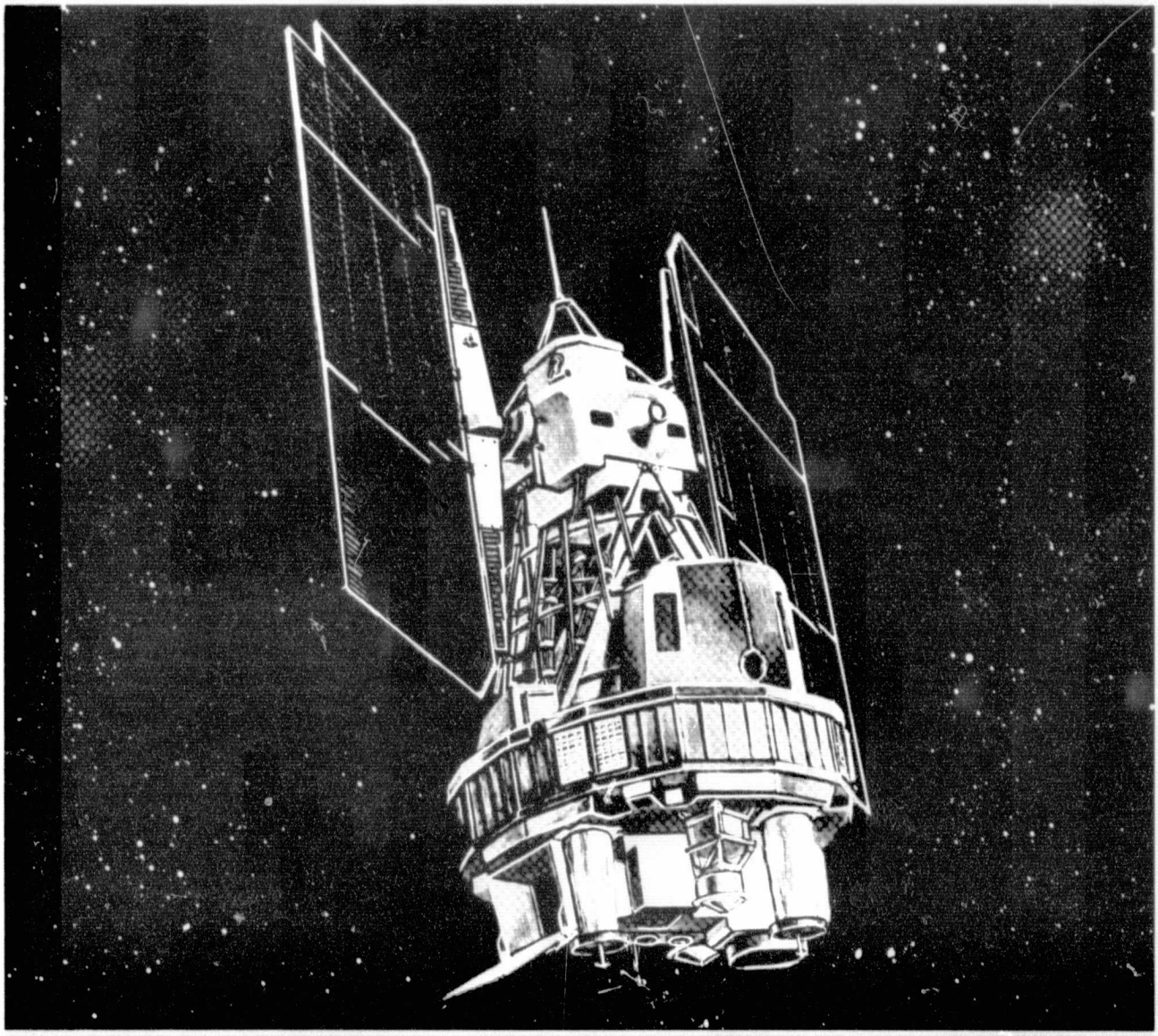

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SECTION 1

INTRODUCTION

This document contains the results of the analysis conducted on the telemetry data from the prelaunch, launch and flight activation phases of Landsat-3 spacecraft. It is presented by subsystem sections and provides for interrelationships as they exist between several subsystems. A brief statement of subsystem characteristics precedes flight evaluation statements. The appendix contains a total list of components flown on Landsat-3 and a complete listing of commands and telemetry functions for reference.

Flight data is compared to baseline data established at the 20°C plateau during thermal vacuum testing of the spacecraft. Evaluation guidelines were derived from the specifications developed from the Landsat program objectives, i. e., the primary mission objective of Landsat-3 is the acquisition of multispectral and panchromatic images of the surface of the earth. To accomplish this objective, two different types of sensors are used; a two camera panchromatic return beam vidicon (RBV) system, and a five channel multispectral scanner (MSS).

A secondary objective is the use of the Landsat-3 receiving, frequency translating, and transmitting equipment as a relay system to gather data from fixed earth-based sensor platforms which are operated by individual investigators.

Systematic, repetitive earth coverage under nearly constant observation conditions is required for maximum utility of the multispectral imagery to be collected by Landsat-3. A circular sun-synchronous orbit provides the optimum repetitive observations conditions.

Landsat-1 has been in orbit since July 23, 1972, and MSS data was collected up to January 7, 1978 when it was retired from active operation. Landsat-2 has been in orbit since January 22, 1975 and has its orbital parameter adjusted to hold and repeat the sub-vehicle earth trace every 251 orbits (or 18 days). Landsat-2 is in active operation collecting MSS and RBV data. Landsat-3 has essentially the same orbit as Landsat-2 and is being adjusted so that the combination of Landsat-2 and Landsat-3 provide repeat coverage of the sub-vehicle 251 orbit earth trace pattern every 9 days.

The first 50 orbits plus the orbit adjust maneuver and MSS 5th Band Activation are covered in this report.

SECTION 2

SUMMARY - ORBITS 1-50

The Landsat-3 spacecraft was launched from the Western Test Range on 5 March, 1978 at 064:17:54:00.551. The launch and orbital injection phase of the spaceflight were nominal and deployment of the spacecraft followed predictions.

POWER SUBSYSTEM (PWR)

After separation, the solar paddles deployed successfully. The right paddle, after being stationary until its position in orbit was suitable, slewed to proper position, and began normal sun tracking. The left paddle did not slew when expected, and was then kept stationary for 3/4 of an orbit to acquire suitable position. It then tracked successfully. After Orbit 2, the midday array current averaged 17.29 amperes and reached a peak current of 18.2 amperes. Battery voltages were 32.2 VDC at max charge, and the end-of-night voltages were about 28.3 VDC. Battery temperatures averaged 18.5°C. All compensation and auxiliary loads completed checkout successfully. In Orbit 2 the shunt loads drew current, showing that the automatic shunt dissipators were operable.

ATTITUDE CONTROL SUBSYSTEM (ACS)

Following a nominal separation at 19:07:00Z and subsequent stabilization, the ACS continued to operate normally. Roll, pitch, and yaw position and rates specification were met successfully. Existing levels of spacecraft disturbance torques resulted in an average of 0.4 roll gates and 0.8 pitch gates per orbit. Analyses are continuing to evaluate the nature of the disturbances and to define subsequent compensation via the use of the Magnetic Moment Compensating Assembly (MMCA). The yaw mode was commanded to "normal" during interrogation 1 Alaska.

COMMAND/CLOCK SUBSYSTEM (CMD)

All command functions have performed well. From separation of the spacecraft, real time, COMSTOR and ECAM commands have been executed in a timely and exact manner, except for Cell 4 of COMSTOR B which became intermittent and failed to verify normally and failed to execute a PMP "ON" Command. COMSTOR B is useable with dummy filter in Cell 4.

TELEMETRY SUBSYSTEM (TLM)

Normal telemetry was consistently received with both the USB and VHF down links being exercised. All functions in the telemetry matrix are normal and within expected limits. All telemetry indicates that the spacecraft telemetry subsystem performance has been nominal.

ORBIT ADJUST SUBSYSTEM (OAS)

Health functions of the OAS were normal. In-plane orbital corrections were made by firing the -X and +X thrusters. The test burns on these thrusters lasted 5.2 seconds each and the longer burns were 660, 420, and 112 seconds duration. All operations were normal. Tracking data have confirmed the desired corrections. About 4.79 pounds of hydrazine were used during these maneuvers.

MAGNETIC MOMENT COMPENSATING ASSEMBLY (MMCA)

MMCA flux density readings and temperature were normal. The unit was not activated during the period of this report. Insertion of dipole values was deferred pending evaluation of the ACS performance.

UNIFIED "S" BAND/PREMODULATION PROCESSOR (USBE)

The USBE functioned normally throughout this period. Power output, telemetry, and data collection system transmissions were all nominal.

SEPARATION AND UNFOLD SUBSYSTEM (SUS)

The separation subsystem performed as expected. The 2.5 second timer initiated paddle unfold. Before separation the subsystem properly restrained the paddles, disabled the primary and redundant matrix A drivers, provided -24.5 VDC to the Attitude Control reset line, and provided telemetry signals indicating that the spacecraft was still mated to the Delta Vehicle. After separation all circuits were activated, separation was confirmed, and paddles were deployed properly. Both separation switches closed as expected.

THERMAL SUBSYSTEM (THM)

The operation of the thermal subsystem in both the sensory ring and the ACS was within the limits at all locations. Average temperatures at Orbit 50 were: ACS baseplate 19.5°C, sensory ring 18.7°C, and center section 15.3°C. The shutter position average at Orbit 50 was 22.6°.

ELECTRICAL INTERFACE SUBSYSTEM (EIS)

All EIS functions that were exercised during launch and activation were executed and confirmed. After launch, power switching was held to a minimum. Operation of time code processing, search track data processing, back-up timer operation, signal switching, and power switching was confirmed.

NARROW BAND TAPE RECORDERS (NBTR)

Both NBTR's operated in a nominal manner. Both recorders were ON and recording during the launch phase. NBTR-1 was played back over Alaska in Orbit 1. During Orbit 2, both NBTR-1 and 2 were played back. Data was satisfactory and continued to be normal throughout this report period. Telemetry points on the recorders were normal.

WIDEBAND TELEMETRY SUBSYSTEM (WBTS)

Both WB links were activated during Orbit 12 in the 10 watt mode. All subsystem telemetry data was normal. The high power mode (20 watts) was tested in Orbit 13, and all telemetry was normal. Prelaunch RBV and MSS data were played back over the wideband links in Orbit 15 and 16 respectively, and all data was normal. MSS minor frame sync errors measured were the same as measured prior to launch. (5 errors per 10 seconds at Goldstone). Both wideband RF links, including receiving site equipment, performed as expected throughout this period.

ATTITUDE MEASUREMENT SENSOR (AMS)

The AMS power was applied during Orbit 5 and the unit has performed as expected since then. ACS fine control agrees with AMS output.

WIDEBAND VIDEO TAPE RECORDERS (WBVTR)

Both recorders were OFF and at mid-tape position during launch. During Orbit 5, the recorders were rewound in preparation for playing back of data recorded prior to launch. Prelaunch RBV data from

WBVTR 1 was played back in Orbit 15 and MSS data from WBVTR 2 was played back in Orbit 16 and all data was good. R/T data from the RBV and MSS activation orbit were played back in orbit 44. WBVTR 1 telemetry values and data quality from the RBV were nominal. WBVTR 2 telemetry values and MFSE counts from MSS data were nominal.

RETURN BEAM VIDICON (RBV)

The RBV subsystem was activated over Greenbelt during Orbit 33. Both cameras were turned on, each operating separately and then together. Telemetry values and waveshapes were nominal.

MULTI-SPECTRAL SCANNER (MSS)

The MSS Bands 1 to 4 were activated over Greenbelt during Orbit 19. All operations were nominal. During Orbit 49, a sun cal occurred over Alaska. After activation, the MSS conducted real-time and record operations in Orbits 27 and 28.

DATA COLLECTION SYSTEM (DCS)

The DCS receiver was powered during Orbit 5, and the DCS system received and re-transmitted the normal number of messages. Telemetry was nominal.

SECTION 3
SPACECRAFT ACTIVATION SEQUENCE

The following paragraphs describe the activation sequence for the Spacecraft through Orbit 50. This sequence is subdivided by orbit and interrogation. For each interrogation, the stations and activities are listed. Only initial activations with associated times are shown. All subsequent commanding was normal.

Prelaunch (WTR, OCC)

1. Start NBR2 in record at 17:30:09 GMT
2. Start NBR1 in record at 17:33:34 GMT
3. Switch to internal power at 17:43:13 GMT

Orbit 0/1 (WTR, WNK, MAD, ULA, HAW)

1. Lift off at 064:17:54:00.551 GMT (5 March 1978)
2. Ascending Node at 18:55:35 GMT.
3. Established VHF command capability at 19:05:38 GMT.
4. Separation at 19:07:00 GMT.
5. Enabled USB transmitter at 19:07:11 GMT
6. USB Ranging ON at 19:07:29 GMT
7. Confirmed controls stabilization of spacecraft; Pneumatics Disable at 19:09:39; Yaw Normal Mode at 19:09:49 GMT
8. Satellite Night to Day Transition at 19:10:01 GMT
9. Separation Switch Bypass at 19:10:25 GMT
10. Establish USB command capability at 19:11:40 GMT
11. Playback of NBR1 at 19:26:56 GMT
12. RMP A OFF at 19:43:51 GMT
13. RSAD ENABLED (by Pre COMSTOR) at 20:00:00 GMT

Orbit 2 (MAD, WNK, ULA, HAW)

1. Confirmed ability to turn compensation loads on and off at 21:10:20 GMT.
2. Playback of NBR2 at 20:44:44 GMT.

Orbit 3 (MAD, ULA)

1. Verified spacecraft status, stored and real time command capability.
2. Set compensation loads at 3, 4, 5, 7, 8.
3. Confirmed ability to turn auxiliary loads on and off at 22:53:11 GMT.

Orbit 4 (ETC, ULA)

1. Verified spacecraft status, stored and real time command capability.

Orbit 5 (ETC, ULA)

1. DC Receiver 1 On at 01:57:51 GMT.
2. APU Normal Mode at 01:58:16 GMT.
3. WBVTR-2 Record ON at 02:01:53 GMT.
4. WBVTR-1 Record ON at 02:03:47 GMT.
5. WBVTR-2 Rewind at 02:02:00 GMT.
6. WBVTR-1 Rewind at 02:04:59 GMT.
7. Attitude Measurement System ON at 02:12:18 GMT.

Orbit 6 (GDS, ULA)

1. Verified spacecraft status and command capability.

Orbit 7 (GDS, ULA)

1. Verified spacecraft status and command capability.

Orbit 8 (ULA)

1. Verified spacecraft status and command capability.

Orbit 9 (ULA)

1. Verified spacecraft status and command capability.

Orbit 10 (MAD)

1. Verified spacecraft status and command capability.

Orbit 11 (BDA)

1. Verified spacecraft status and command capability.

Orbit 13 (ETC, EGD)

1. Wideband power amplifiers 1 ON 10 watts (no modulation) at 16:08:47, OFF at 16:15:38 GMT
2. Wideband power amplifiers 2 ON 10 watts (no modulation) at 16:10:03, OFF at 16:15:38 GMT
3. Wideband frequency modulator inverter, ON at 16:09:01, OFF at 16:15:43 GMT

Orbit 14 (ULA, EGD)

1. Wideband power amplifier 1 ON 20 watts (no modulation) at 17:49:51 GMT
2. Wideband power amplifier 2 ON 20 watts (no modulation) at 17:51:02 GMT
3. WBFM ON 17:50:07 GMT
4. Enabled and configured RBV/MSS filters. Real Time RBV data on Filter A and real time MSS data on Filter B at 17:58:10 GMT (no modulation).
5. WBPA1 OFF at 18:02:01. WBPA2 OFF at 18:02:03, WBFM OFF at 18:02:05 GMT.

Orbit 15 (ULA)

1. WBVTR-1 Playback mode ON at 19:31:00, OFF, at 19:36:03 GMT

Orbit 16 (ULA)

1. WBVTR-2 Playback mode ON at 21:13:42, OFF at 21:18:41 GMT

Orbit 17 (ULA)

1. Verified spacecraft status and command capability.

Orbit 18 (ETC, ULA)

1. Verified spacecraft status and command capability.

Orbit 19 (ETC, ULA)

1. Commanded MSS band 1-4 and modes ON/OFF in sequence, then total system operated (including WBVTR-2 Rec), 02:03:22 GMT

Orbit 20 (GDS, ULA)

1. Verified spacecraft status and command capability.

Orbit 21 (GDS, ULA)

1. Verified spacecraft status and command capability.

Orbit 22 (ULA)

1. Verified spacecraft status and command capability.

Orbit 23 (ULA)

1. Verified spacecraft status and command capability.

Orbit 24 (MAD)

1. Verified spacecraft status and command capability.

Orbit 25 (BDA)

1. Verified spacecraft status and command capability
2. RMP A ON and Orbit Adjust Thruster Heaters ON

Orbit 26 (BDA/ ETC/ QUIT/ AGO)

1. Verified spacecraft status and command capability.
2. Orbit Adjust 5.2 second test burn of +X and -X Thruster.

Orbit 27 (ETC, GDS)

1. Verified spacecraft status and command capability.

Orbit 28 (ULA, GDS)

1. Real time MSS operations

Orbit 29 (ULA)

1. ECAM checkout started
2. RMP A ON, Orbit Adjust Thruster Heaters ON

Orbit 30 (ULA, HAW, ORR)

1. ECAM checkout continued
2. Orbit Adjust, 660 sec. +X thruster

Orbit 31 (ULA, GWM, ORR)

1. Routine operation
2. ECAM checkout

Orbit 32 (ETC, ULA)

1. Routine operation
2. ECAM checkout

Orbit 33 (ETC, ULA)

1. RBV initial activation and checkout. Total system operated at 02:15:09 GMT.
2. ECAM checkout

Orbit 34 (GDS, ULA)

1. Routine operation
2. ECAM OFF

Orbit 35 (GDS, ULA)

1. Routine operation

Orbit 36 (ULA)

1. Routine operation

Orbit 37 (MAD)

1. Routine operation

Orbit 38 (GWM)

1. Routine operation

Orbit 39 (SANH)

1. Routine operation

Orbit 40 (ETC, QUIT)

1. Routine operation
2. ECAM checkout

Orbit 41 (ETC, GDS)

1. Routine operation

Orbit 42 (ULA, GDS)

1. Routine operation

Orbit 43 (ULA, HAW)

1. ECAM checkout
2. WBVTR-1 P/B
3. WBVTR-2 P/B

Orbit 44 (WNK, ULA)

1. ECAM checkout
2. WBVTR-1 P/B and FF
3. WBVTR-2 P/B and REW

Orbit 45 (ULA)

1. Routine operation
2. ECAM checkout

Orbit 46 (ETC, ULA)

1. Routine operation

Orbit 47 (ETC, ULA)

1. WBVTR-1 P/B

Orbit 48 (GDS, ULA)

1. Routine operation
2. All compensation loads OFF

Orbit 49 (GDS, ULA)

1. MSS Sun Calibration

Orbit 50 (ULA)

1. Routine operation

SECTION 4

ORBITAL PARAMETERS

The Landsat-3 spacecraft was launched from the Western Test Range in a Near Polar Orbit on 5 March 1978 at 17:54:00 GMT. The official international designation is 1978-026A and the mission tracking and telemetry number is 780261. Elements of the mission orbit are shown in Table 4-1.

Table 4-1. Elements of the Mission Orbit

	Planned*	Post Launch[1]	Post Orbit Adjusts[2]
1. Apogee	$915.99^{+3.48}_{-3.06}$ km	913.96 km	916.67 km
2. Perigee	$899.67^{+4.98}_{-6.16}$ km	897.30 km	898.83 km
3. Inclination	$99.1487^{+0.036}_{-0.034}$ deg	99.1348 deg	99.1249 deg
4. Semi-major axis	7285.9970 km	7283.7988 km	7285.9149 km
5. Eccentricity	$0.001120^{+0.0009}_{-0.0006}$	0.001143	0.001225
6. Anomalistic Period	$103.15516^{+0.134}_{-0.134}$ min	103.10848 min	103.15341 min
7. Nodal Period	103.27066 min	103.22404 min	103.26899 min
8. Argument of Perigee	302.5609 deg	306.5555 deg	258.6162 deg
9. Right Ascension of A_N	125.6747 deg	125.6244 deg	133.8339 deg
10. Mean Anomaly	98.1039 deg	94.3356 deg	281.4021 deg
11. Velocity at Perigee	26657 km/hr	26662 km/hr	26660 km/hr
12. Velocity at Apogee	26598 km/hr	26601 km/hr	26595 km/hr
13. Geoc. Lat. of Perigee	56.315 deg	52.476 deg	75.452 deg
14. LS-2/LS-3 Ground Pattern	6 day/12 day	6 day/12 day	9 day/9 day
15. LS-3 Leads LS-2 at D_N	25 to 51.5 min	14 min 32 sec	25 min 42 sec
16. R. A. Motion	$+0.9942^{+0.0046}_{-0.0050}$ deg/day	+0.9938 deg/day	+0.9917 deg/day

* The tolerances represent the 3-signs values expected from the launch vehicle.

1 EPOCH 78Y, 03M, 05D, 19H, 07M, 02.0005, UT.

2 EPOCH 78Y, 03M, 14D, 01H, 31M, 53.109S, UT.

The Brouwer mean orbital elements for satellite 780261 (Landsat-3) computed and issued by the Goddard Space Flight Center are shown in Table 4-2.

The mission requirement for Landsat-3 was to place the satellite in a sun synchronous orbit with an 18-day ground track repeat cycle, and to time phase it to a minimum of 25 minutes between equator crossings with Landsat-2. Landsat-3 leads Landsat-2 at the Descending Node (Equator Crossing) by 25 minutes and 42 seconds after the Orbit Adjust and will drift to 51 minutes in approximately two years.

Also required was a combined full coverage of the earth, using both Landsat-2 and Landsat-3 in 9 days. These requirements have been achieved satisfactorily with in-plane orbital corrections of Landsat-3 which placed the satellites 9 days apart in the 18-day ground track repeat cycle.

Figure 4-1 shows the first and subsequent orbit tracks of Landsat-3. All descending equatorial crossings occur at approximately 9:30 a. m. local time. All ascending crossings are in local darkness.

Table 4-2. Landsat-3 Brouwer Mean Orbital Parameters

Element / Date	Apogee (KM)	Perigee (KM)	Inclination (Deg.)	Semi-Major Axis (KM)	Eccentricity	Anomolistic Period (Min)	Nodal Period (Min)	Argument of Perigee (Deg)	Right Ascension (Deg)	Mean Anomaly (Deg)
Nominal	915.99	899.67	99.1487	7285.9970	0.001120	103.15516	103.269	302.5609	125.6747	98.1039
5 Mar 1978[1]	913.96	897.30	99.1348	7283.7988	0.001143	103.10848	103.2	306.5555	125.6244	94.3356
14 Mar 1978[2]	916.67	898.83	99.1249	7285.9149	0.001225	103.15341	103.26	258.6162	133.8339	281.4021

1. Post Launch.
2. After the sequence of phasing maneuvers completed in Orbit 115.

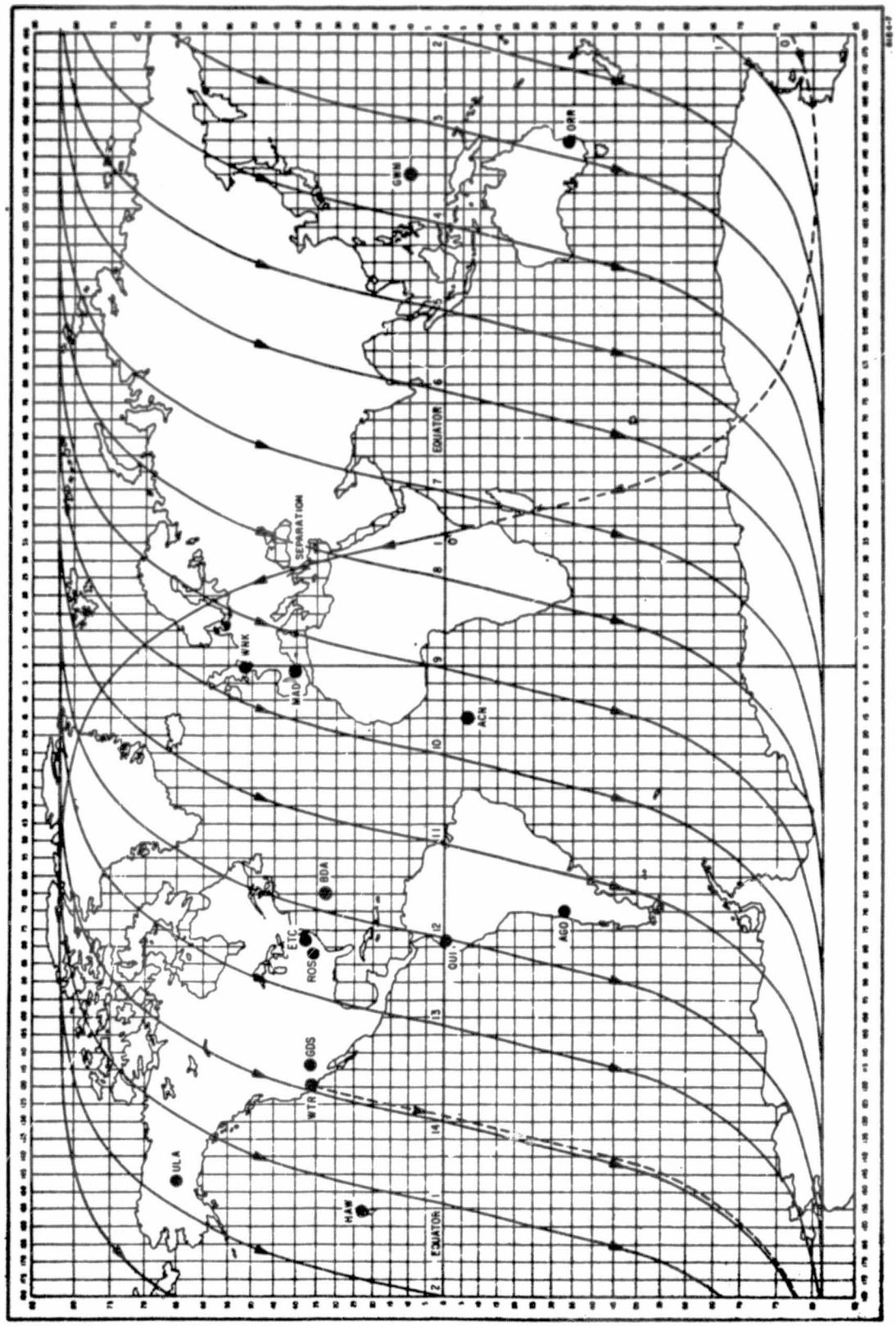

Figure 4-1. Landsat-3 Spacecraft Subsatellite Plot

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SECTION 5

POWER SUBSYSTEM (PWR)

The power subsystem includes two solar array platform assemblies to convert solar energy to electrical energy; eight storage modules to store electrical energy; one auxiliary load controller and two auxiliary load panels to dissipate excess electrical power; one power control module and one payload regulator module to regulate and distribute power. See Figure 5-1 for functional block diagram, and Figure 5-2 and Figure 5-3 for hardware illustration.

The power subsystem provides unregulated and regulated power to satisfy the electrical load requirements of the spacecraft. Unregulated power is supplied with a voltage range of -26 vdc to -37.5 vdc. The regulated power bus is -24.5 ± 0.5 vdc with an output dc impedance of 0.01 ohm and an output ac impedance of 0.1 ohm at frequencies up to 10 KHz. The power control module can deliver up to 20 amperes and the payload regulator module can deliver up to 26 amperes under these conditions.

Table 5-1 lists the components in the Power Subsystem for Landsat-3.

The Power Subsystem was launched in the configuration shown in Table 5-2.

Table 5-1. Power Subsystem Component Log

Component Name	Serial Number
Power Control Module (S/C)	015
Power Controls Module (P/C)	013
Auxiliary Load Controller	6627068
Interface Switching Module	LSC-FT-1
Power Switching Module	6549499
Auxiliary Load Panel 1	6627053
Auxiliary Load Panel 2	6627052
Battery 1	070
Battery 2	065
Battery 3	066
Battery 4	032
Battery 5	069
Battery 6	068
Battery 7	047 R
Battery 8	028 R

Table 5-2. Launch Mode for Power Subsystem

Power Subsystem			Verification
BATT 1 BATT 2 BATT 3 BATT 4 BATT 5 BATT 6 BATT 7 BATT 8	ON	353	BATT 1 - 8 ON
AUX LD 1 AUX LD 2 AUX LD 3 AUX LD 4 AUX LD 5	OFF	374	AUX LOADS OFF
SHUNT LD A SHUNT LD B SHUNT LD C SHUNT LD D	ON	437	SHUNT LOADS ENABLE
COMP LD 1 COMP LD 2 COMP LD 3 COMP LD 4 COMP LD 5 COMP LD 6 COMP LD 7 COMP LD 8	OFF	355	COMP LOADS OFF
TR CHARGE	NORM	346	TRICKLE CHARGE NORMAL
PRM	ON	727	PRM ON
PSM BUSS	EN	655	PSM RELAYS ENABLE
SW TMP PWR ON	ON	614	TELEMETRY POWER ON

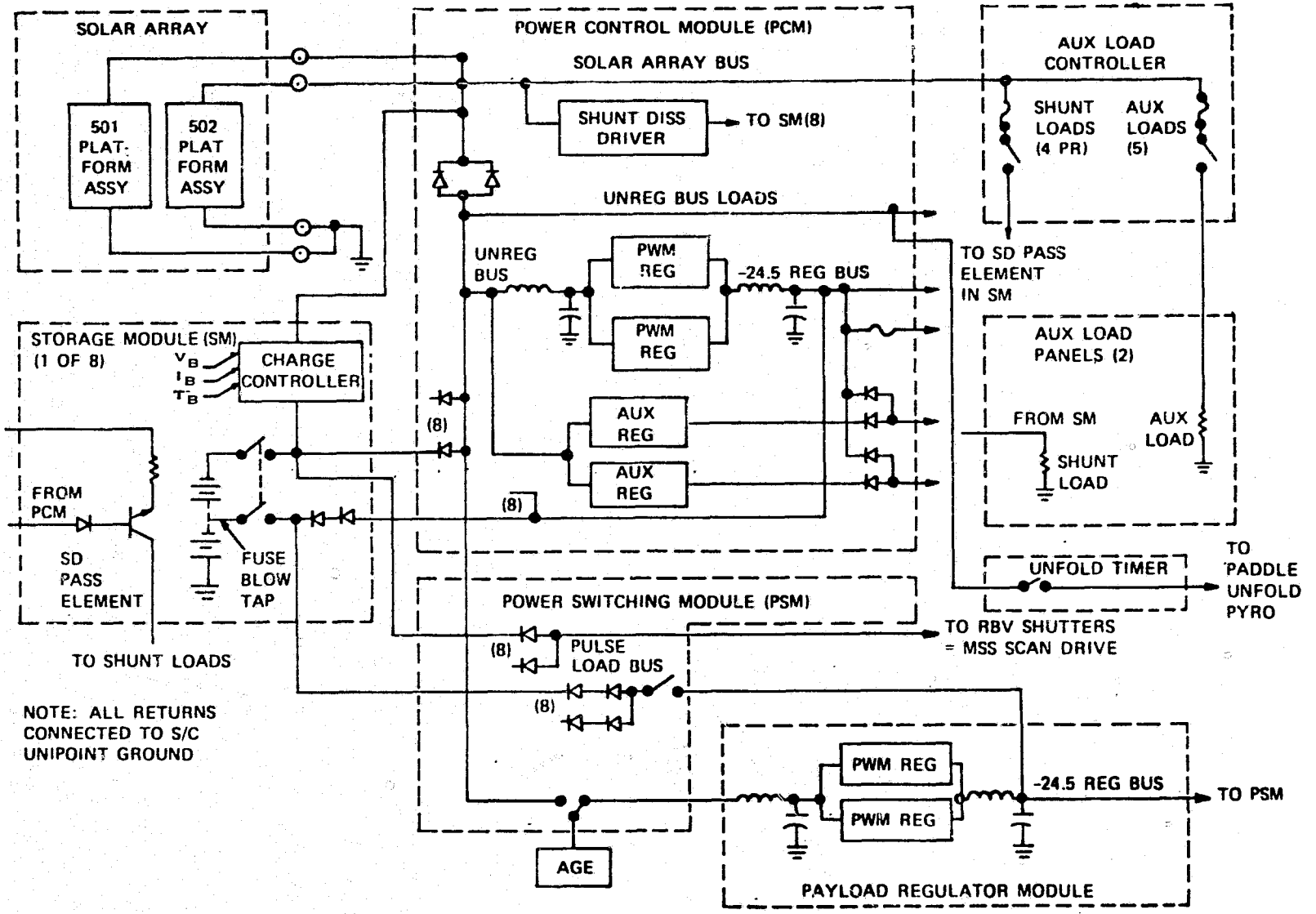

Figure 5-1. Functional Block Diagram, Landsat-3 Power Subsystem

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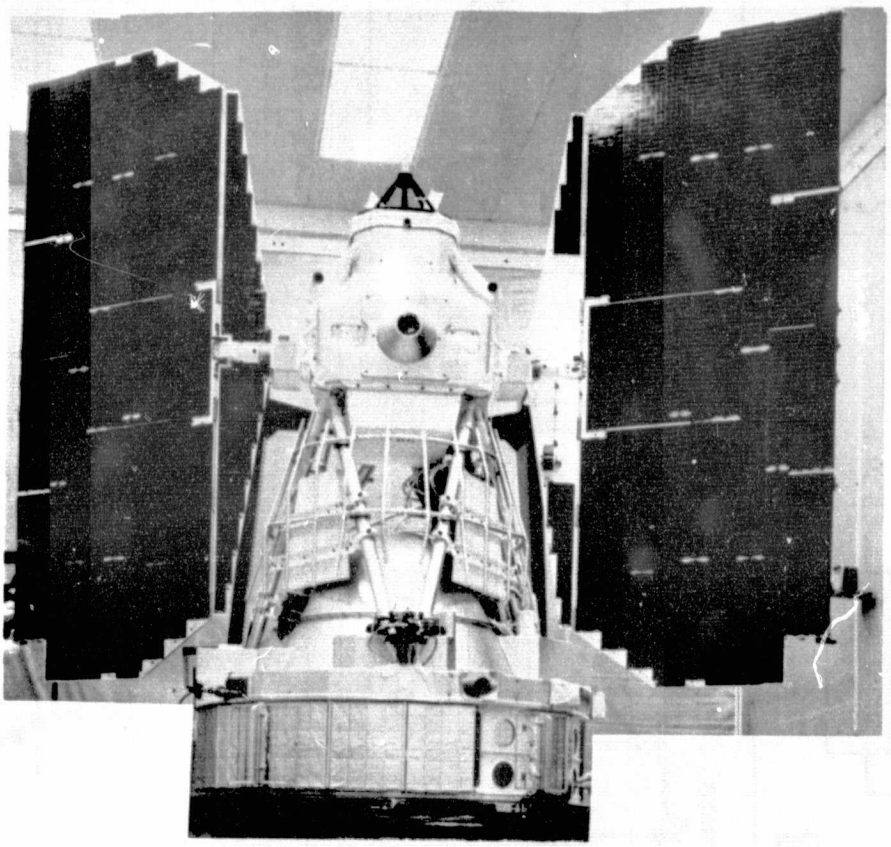

Figure 5-2. Landsat-3 Observatory Solar Array Deployment

Performance

The battery packs in the Landsat-3 power subsystem were on low level charge until 17:43:13 GMT when the spacecraft was switched to internal power prior to launch. The batteries powered the spacecraft for approximately two hours and 11 minutes until 19:54 GMT when the solar array current became high enough to supply the load and begin recharging the batteries. The maximum depth of discharge was 37.2%. The voltage was 28.0 at this point with a current of less than 50 milliamperes.

For comparison to Landsat-1 and Landsat-2 data, a time of 19:12:09 GMT was taken when the battery voltages were near their minimum voltage due to high currents and deep discharge. Table 5-3 shows this comparison. The voltages are quite adequate to safely supply the Landsat-3 mission.

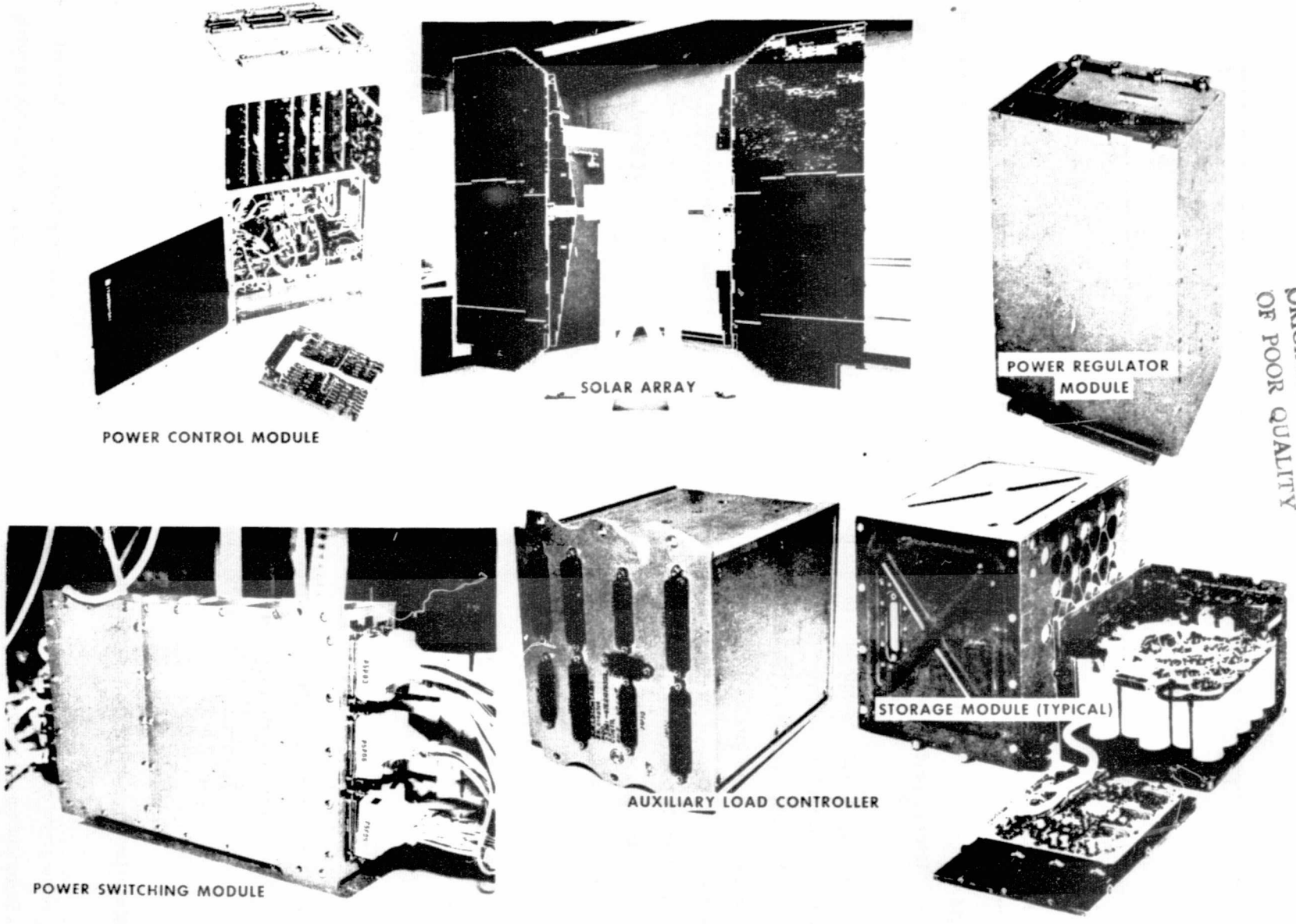

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Figure 5-3. Landsat-3 Power Subsystem

Table 5-3. Comparison of Battery Discharge Characteristics

Spacecraft	Current Spread (Amperes)	Depth of Discharge (%)	Voltage Average (Volts)	Temperature Range (DGC)
Landsat-1	0.72-0.82	27.8	28.21	18.8-21.5
Landsat-2	0.89-1.00	27.8	28.29	16.1-20.3
Landsat-3	0.82-1.06	27.8	27.99	17.4-21.4

End of night voltages, average battery temperatures, and temperature spread between batteries is shown in Table 5-4. Battery performance is normal.

The solar drives were launched with both panels in the normal mode. After separation, at night the right solar panel was held without rotation for 53 minutes, when orbital rotation positioned it suitably for sun acquisition. The right SA tracked faithfully thereafter. The left panel began slewing after separation but quickly stopped because of (presumed) shadowing of the sun sensor. It was then held stationary until 3/4 of an orbit later when its position was suitable for sun acquisition. Proper sun tracking of both solar panels was not complete until near the end of day in Orbit 2. Orbit 3 had normal solar array characteristics. See Figure 5-4 for a plot of solar array current in Orbits 1, 2, 3. At midday there is no earthshine and the solar array in Orbit 3 had a current of 17.29 amps at an unregulated bus voltage of -32.1 volts. This point will be used to monitor solar array degradation in future reports. The solar array average energy was 1260 ampere-minutes in early orbits. Based on the above results the power subsystem is anticipated to fully support Landsat-3 mission with adequate power.

During Orbit 2 the shunt limiter went into operation when battery taper began. The maximum unregulated bus voltage during shunt limiter operation was 37.6 volts.

Compensation load command capability was verified in Orbit 2. In Orbit 3 compensation loads 3, 4, 5, 7 and 8 were turned on to provide even heating of the spacecraft until normal operation began. In Orbit 15 Comp Load 6 was added. removed in Orbit 32, and restored in Orbit 34. All Comp Loads were turned OFF in Orbit 48.

The Auxiliary Load capability was verified in Orbit 1.

Auxiliary loads were not required during Orbit 1 and 2 because of solar array misalignment. Manual power management was performed for 28 orbits to accommodate the early activation orbits with varying load profiles. Beginning in Orbit 29 spacecraft operation was scheduled by Mission Planning and the automatic scheduling of auxiliary loads as determined by the Power Management Program was started.

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Table 5-4. Landsat-3 Major Power Subsystem Parameters

Pwr. Mgmt. Orbit No.	TV @ 20°C	Orbit 5	Orbit 28	Orbit 56
Batt 1 Max	*	-31.64	-30.70	-32.41
2 Chge	*	-31.64	-30.70	-32.41
3 Volt	*	-31.75	-30.84	-32.50
4	*	-31.64	-30.70	-32.32
5	*	-31.64	-30.79	-32.41
6	*	-31.73	-30.79	-32.41
7	*	-31.86	-30.94	-32.54
8	*	-31.64	-30.70	-32.32
Average	*	-31.69	-30.77	-32.41
Batt 1 End-of-Night	*	-28.83	-27.73	-29.60
2 Volt	*	-28.83	-27.73	-29.51
3	*	-29.00	-27.92	-29.75
4	*	-28.83	-27.73	-29.51
5	*	-28.92	-27.81	-29.60
6	*	-28.92	-27.81	-29.60
7	*	-29.00	-27.91	-29.76
8	*	-28.75	-27.64	-29.51
Average	*	-28.88	-27.78	-29.60
Batt 1 Chge	12.7	12.47	12.64	12.51
2 Share	12.6	12.05	12.24	11.78
3 (%)	12.6	11.95	11.50	11.64
4	12.1	12.19	12.38	12.31
5	12.5	13.95	13.40	14.25
6	12.5	12.65	12.62	12.54
7	12.5	12.49	12.56	12.84
8	12.5	12.24	12.66	12.11
Batt 1 Load	12.9	12.97	12.72	12.85
2 Share	12.3	12.54	12.17	11.94
3 (%)	12.5	12.35	11.94	11.99
4	12.0	11.91	12.26	12.06
5	12.1	12.90	13.27	13.88
6	13.3	12.03	12.13	11.97
7	12.4	12.51	12.71	12.80
8	12.5	12.79	12.80	12.51
Batt 1 Temp	*	17.37	16.73	15.70
2 in	*	15.80	15.18	14.31
3 (°C)	*	17.12	16.17	15.26
4	*	19.61	20.66	19.46
5	*	22.59	20.49	19.57
6	*	17.25	16.21	15.49
7	*	21.98	21.77	20.71
8	*	20.15	18.80	17.55
Average	*	18.98	18.25	17.26
S/C Reg Bus Pwr. (W)	*	150.2	175.4	148.9
Comp Load Pwr. (W) (P/O S/C Reg Bus Pwr)	* *	42.39	49.25	0.0
P/L Reg Bus Pwr. (W)	*	9.3	10.2	14.3
C/D Ratio	*	2.59	1.12	1.26
Total Charge (A-M)	*	422.88	255.6	253.0
Total Discharge (A-M)	*	163.12	229.2	200.7
Solar Array (A-M)	*	1263	1260	1252
S.A. Peak I (Amp)	*	18.26	18.26	18.08
Sun Angle (Deg)	*	40.7	40.6	40.4
Max R Pad Temp (°C)	*	57.20	58.40	58.40
Min R Pad Temp (°C)	*	-39.34	-39.34	-38.67
Max L Pad Temp (°C)	*	53.07	53.84	53.84
Min L Pad Temp (°C)	*	-40.71	-40.71	-40.71

* Data from TV not applicable

Table 5-4 shows major power subsystem parameters and Table 5-5 shows power subsystem telemetry for selected orbits. All regulated voltages are stable and in close agreement with ground measurements. Some parameters in Table 5-4 may be slightly different than Table 5-5 because 5-4 uses a time span for power management (night followed by a day) different from the time span which is used in Table 5-5 which is the playback period from the NBTR. Functions 6055, S/C RG Bus I and 6072, P/L RG Bus I are valid only during slow verify. They are redundant with Functions 6056, S/C RG Bus I and 6100, P/L RG Bus I which are also valid during fast verify.

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Table 5-5. Landsat-3 Power Subsystem Analog Telemetry

(Average Value for Data Received in NBTR Playback)

Function	Description	Unit	TV @ 20°C	Orbits		
				5	28	56
6001	Batt 1 Disc I	Amp	*	0.86	0.95	0.74
6002	2		*	0.82	0.89	0.69
6003	3		*	0.81	0.86	0.60
6004	4		*	0.82	0.93	0.73
6005	5		*	0.94	0.99	0.80
6006	6		*	0.83	0.88	0.64
6007	7		*	0.86	0.95	0.74
6008	8		*	0.82	0.93	0.72
6011	Batt 1 Chg I	Amp	*	0.58	0.48	0.62
6012	2		*	0.56	0.42	0.59
6013	3		*	0.57	0.44	0.62
6014	4		*	0.58	0.45	0.63
6015	5		*	0.64	0.48	0.72
6016	6		*	0.62	0.45	0.62
6017	7		*	0.63	0.47	0.66
6018	8		*	0.56	0.45	0.62
6021	Batt 1 Volt	VDC	*	-30.75	-29.45	-31.06
6022	2		*	-30.74	-29.42	-31.04
6023	3		*	-30.88	-29.61	-31.18
6024	4		*	-30.69	-29.39	-31.00
6025	5		*	-30.76	-29.49	-31.09
6026	6		*	-30.79	-29.50	-31.10
6027	7		*	-30.93	-29.65	-31.24
6028	8		*	-30.71	-29.40	-31.00
6031	Batt 1 Temp	DGC	*	17.17	16.77	15.79
6032	2		*	15.69	15.28	14.55
6033	3		*	17.14	16.26	15.33
6034	4		*	19.72	20.74	19.47
6035	5		*	22.11	20.57	19.58
6036	6		*	17.21	16.29	15.56
6037	7		*	21.84	21.96	20.71

6032	2		*	15.69	15.28	14.55
6033	3		*	17.14	16.26	15.33
6034	4		*	19.72	20.74	19.47
6035	5		*	22.11	20.57	19.58
6036	6		*	17.21	16.28	15.56
6037	7		*	21.84	21.96	20.71
6038	8		*	19.90	18.80	17.63
6040	Rt. Pad Temp	DGC	*	27.70	22.79	28.58
6041	Rt. Pad VM	VDC	*	34.50	32.73	34.03
6042	Rt. Pad VN	VDC	*	34.31	32.54	33.83
6044	Lt. Pad Temp	DGC	*	22.21	17.71	23.63
6045	Lt. Pad VF	VDC	*	34.51	32.76	34.05
6046	Lt. Pad VG	VDC	*	34.13	32.38	33.65
6050	S/C UR Bus V	VDC	*	-31.47	-29.66	-31.26
6051	S/C RG Bus V	VDC	24.56	-24.57	-24.55	-24.58
6052	Aux Reg AV	VDC	23.52	-23.52	-23.52	-23.52
6053	Aux Reg BV	VDC	23.52	-23.52	-23.52	-23.52
6054	Solar I	Amp	*	16.81	16.65	16.73
6055	S/C RG Bus I	Amp	*	6.13	7.15	T
6056	S/C RG Bus I	Amp	*	6.13	7.16	6.08
6058	PC Mod T1	DGC	*	21.03	21.85	20.30
6059	PC Mod T2	DGC	*	19.58	19.55	18.44
6070	P/L RG Bus V	VDC	24.68	-24.64	-24.59	-24.64
6071	P/L UR Bus V	VDC	*	-31.48	-29.70	-31.27
6072	P/L RG Bus I	Amp	*	0.38	0.42	T
6073	P Aux AV	VDC	23.75	-23.63	-23.62	-23.63
6074	P Aux BV	VDC	23.75	-23.68	-23.66	-23.68
6075	PR Mod T1	DGC	*	18.04	17.30	17.36
6076	PR Mod T2	DGC	*	17.65	16.96	16.77
6079	Fuse Blow V	VDC	*	-24.65	-24.60	-24.66
6080	Shunt 1 I	Amp	*	0.08	0.00	0.00
6081	2		*	0.08	0.08	0.00
6082	3		*	0.08	0.00	0.00
6083	4		*	0.08	0.08	0.00
6084	5		*	0.08	0.00	0.00
6085	6		*	0.08	0.08	0.00
6086	7		*	0.08	0.00	0.00
6087	8		*	0.08	0.08	0.00
6100	P/L RG Bus I	Amp	*	0.38	0.42	0.58
Total No.	Major Frames	Frm	*	380	622	372

* Data from TV not applicable

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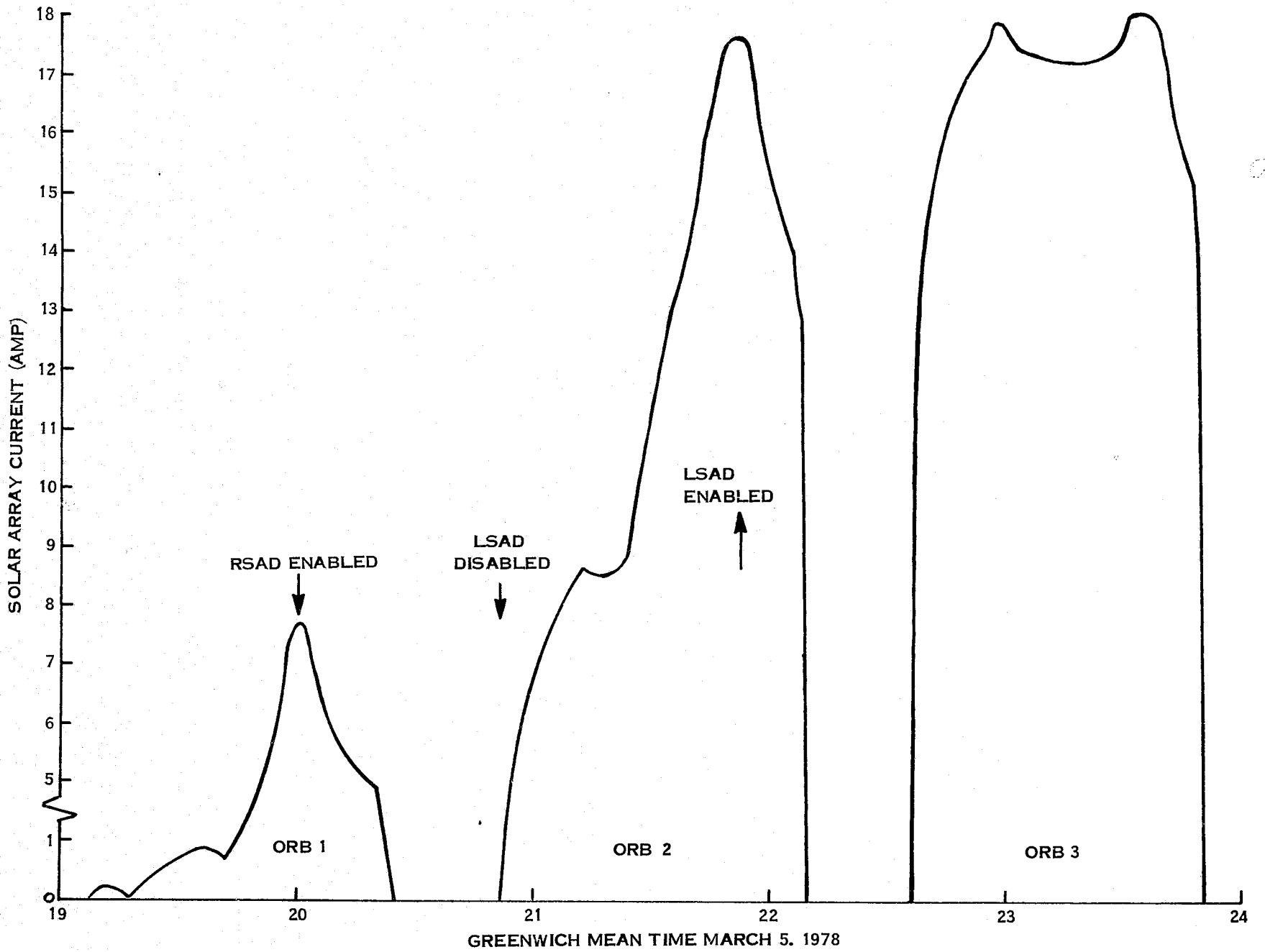

Figure 5-4. Initial Acquisition of Solar Array Current

SECTION 6

ATTITUDE CONTROL SUBSYSTEM (ACS)

The Attitude Control Subsystem (ACS) consists of 13 major component parts, plus a thermal subsystem mounted to a structure composed of mounting surfaces above a honeycomb baseplate. Solar paddles are attached to two separate shafts, with individual drive motors to provide greater reliability in solar tracking.

The major requirements of the ACS is to provide satellite alignment with the local earth vertical and orbit velocity to within $\pm$ 0.7 degree in pitch and roll and $\pm$ 1 degree in yaw. The instantaneous angular rates about the axes during normal operation are required to be less than 0.10 degree/second.

To accomplish this, a 3-axis active ACS is provided, using horizon scanners for roll and pitch attitude error sensing, and a rate gyro used in a gyro-compassing mode to sense yaw attitude. Included also is a yaw rate gryo to sense yaw rate in an acquisition mode. The torquing subsystem uses a combination of reaction jets to provide net momentum control and large control torques when required. Flywheels are utilized for fine control and residual momentum storage. See Figure 6-1 for the ACS functional block diagram, and Figure 6-2 for the hardware configuration.

The ACS subsystem was launched in the mode shown in Table 6-1.

Landsat-3 separated from its second stage booster on 5 March 1978 at 19:07:00 GMT hours and approximately 17.5 seconds later an almost effortless ACS acquisition commenced.

Two minutes and forty-one seconds after the ACS system's activation, Landsat-3's attitude was within the $\pm$ 0.7^{o} dead band specification for Roll and Pitch attitude error, and Pitch flywheel speed alone remained to be lowered by pneumatic momentary enable commands.

ACS pneumatic gating during the two minute, forty-one second acquisition phase was minimal. Only one (-P), one (+R), two (+Y) and three (-Y) gates were required to effect normal attitude and Pneumatics were disabled at 19:09:38.

Paddle unfold and deployment were accomplished by the 2.5 second timer.

By design, the RSAD was inhibited from rotating even though the 50 second timer functioned normally.

At SAD enable time, it was known the rear surface of the Right Solar Array would be facing the sun and the RSAD sun sensors would be in the spacecraft's shadow. Activating the RSAD under these conditions would

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Figure 6-1. Attitude Control Subsystem Block Diagram

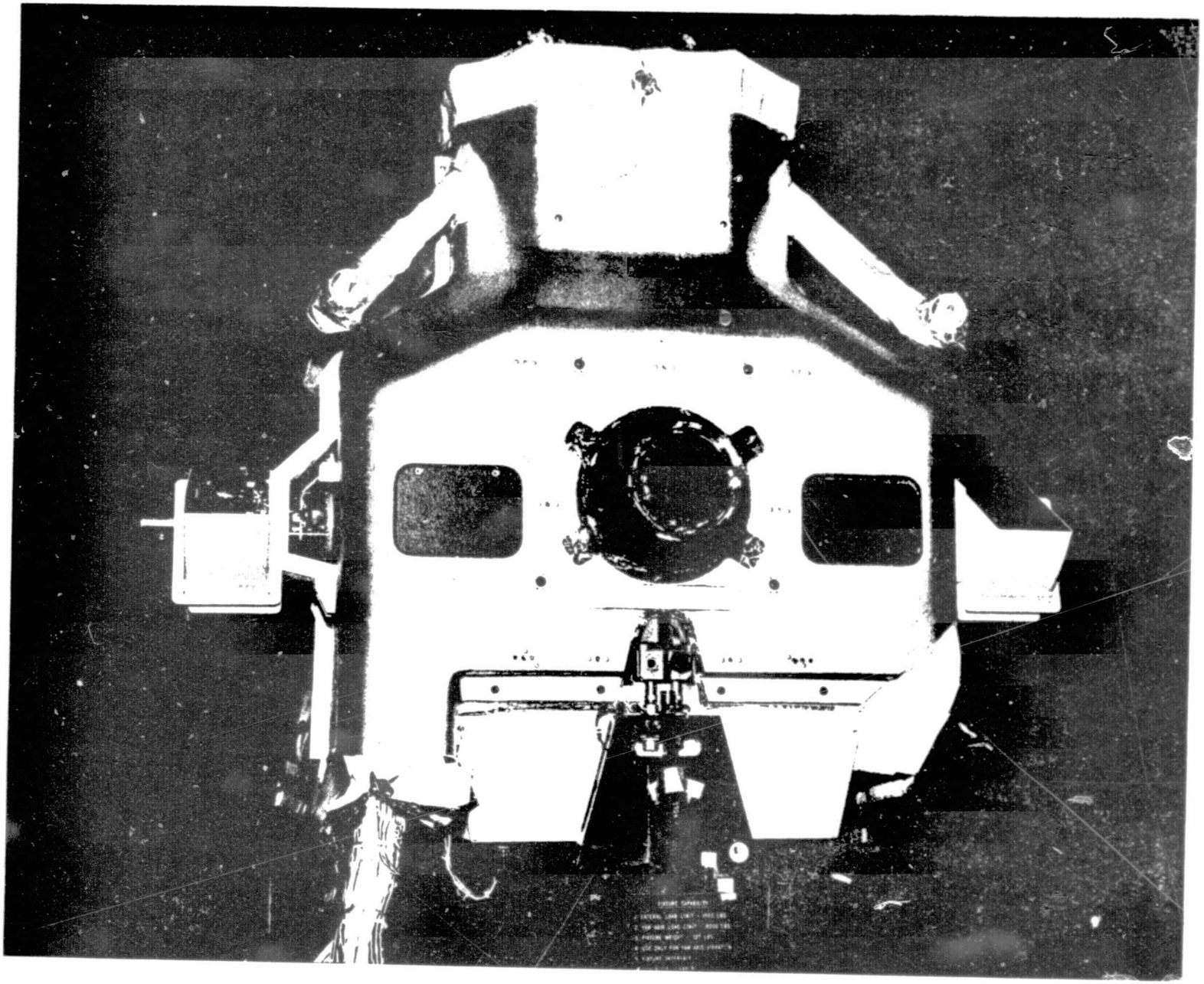

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Figure 6-2. Attitude Control Subsystem

Table 6-1. Attitude Control Subsystem Launch Mode

ACS Subsystem		Cmd	Remarks
LO VOLT INT	RESET	044	Pneumatics Enable
RSAD RATE	OFF	425	SAD Right Rate - Normal
LSAD RATE	NORM	244	SAD Left Rate - Normal
RSAD MODE	DIS	270	Right SAD Disabled (off)
LSAD MODE	EN	365	Left SAD Enabled
RSAD PWR	FUSE	674	SAD Right Power - FUSD
LSAD PWR	FUSE	713	SAD Left Power - FUSD
PNEU	EN	040	Pneumatics - Enable
PNEU INTLK	DIS	042	Pneumatics Interlock - Bypass
PMB MODE	DIS	104	Pitch Momentum Bias
P POS BIAS	+	145	Pitch Bias - Position
0.6 PPB	DIS	663	Pitch Bias
2.0 PPB	DIS	661	Pitch Bias
2.9 PPB	DIS	122	Pitch Bias
P UNLOAD	EN	165	Pitch - Roll Unload, Both
R UNLOAD	EN	161	Pitch - Roll Unload, Both
ROLL TACH	EN	064	R DFT ST - Normal
ROLL TACH GAIN	NORM	100	R DFT ST - Normal
YAW WHEEL	EN	163	Yaw Wheel Enable
YAW POS BIAS	+	160	Yaw Bias
0.1 YPB	DIS	120	Yaw Bias
0.3 YPB	DIS	060	Yaw Bias
P.P.B.	DIS	623	Pitch Pos. Bias Disarm
RLNA/YAW	DIS	102	RLNA - Yaw - Disable
YAW MODE	ACQ	204	Yaw Mode - Acquisition
0.A Mode	DIS	221	Orbit Adj - Disable
400 RPM INT	EN	203	400 RPM - Enable
RMP B	EN	223	Select RMP - No. 2
RMP B HTR	ON	305	RP2 Stat Normal
RMP B MTR	ON	304	RP2 Stat Normal
RMP A MTR	ON	SEQ	RMP A ON
EN SCAN SEL	A	636	Scanners Both 1
SSN	LOCK	675	Scanner - Lock

have prolonged Right Solar Array sun lock-in for several orbits. Consequently RSAD activation was deliberately delayed for a short period until the spacecraft was in a more favorable orbital location. Upon activation, the RSAD drove at normal rate and sun lock-in was accomplished without event.

The LSAD was activated on schedule by the 50 second timer and drove clockwise at night bias rate for approximately twenty minutes, until the rear sun sensor cleared the albedo shield. It then slewed clockwise at 11.4°/min. for three minutes. Slewing stopped and the LSAD continued at night bias rate, maintaining a 110° to 130° lagging error with the sun.

Slewing was expected to continue until the Left Solar Array's cell side was aligned with the sun.

The LSAD was commanded OFF when it became evident it would not acquire the sun automatically and it was maintained OFF until the spacecraft proceeded to a known point in its orbit where the Left Solar Array Forward Sun Sensor would be in full view of the sun and would cause the LSAD to track the sun automatically.

In Orbit 2, as the spacecraft approached the point in orbit - near the South terminator - where the LSAD's forward sun sensor was aligned with the sun, the LSAD was enabled and it acquired the sun without event (see Figures 5-4 and 6-3).

LSAD response during sun acquisition remains a subject of current analysis.

Table 6-2 shows solar array acquisition events for both the RSAD and the LSAD.

Table 6-2. Solar Array Sun Acquisition

RSAD		LSAD	
Event	GMT	Event	GMT
Enable	20:00:09	Enable	19:07:53
Sun Lock In (Error Less Than 10^{o})	20:55:53	Disable	20:46:35
		Enable	20:54:54
		Disable	20:55:45
		Enable	21:53:35
		Sun Lock In (Error Less Than 10^{o})	21:56:26

Both RMP's and the Yaw Rate Gyro performed normally during the acquisition maneuver and the Yaw Rate Gryo was commanded OFF at 19:09:48 (Yaw Normal Mode).

RMP 1 was commanded OFF at 19:43:50 leaving RMP 2 as the prime operating system.

Tables 6-3, 6-4, 6-5, and 6-6 are chronological summaries of the details of acquisition. The various phases of acquisition were accomplished at the following GMT times.

1.	Pitch and Roll Error $\pm 5.0^{o}$ deadband	19:07:22 (Pitch Error equal to -5.0^{o})
2.	Pitch and Roll Error $\pm 0.7^{o}$ deadband	19:09:59 (Pitch Error equal to -0.7^{o})
3.	Wheel speeds below gating level	19:33:01 (Pitch Flywheel speed equal to 255 RPM CW)
4.	Yaw rate gyro below 0.25^{o}/sec and RMP out of saturation and pitch and roll acquisition accomplished.	(19:08:15 RMP 1 out of saturation, yaw rate equal to -0.125^{o}/sec) 19:09:59 ($+0.7^{o}$ deadband spec. met)

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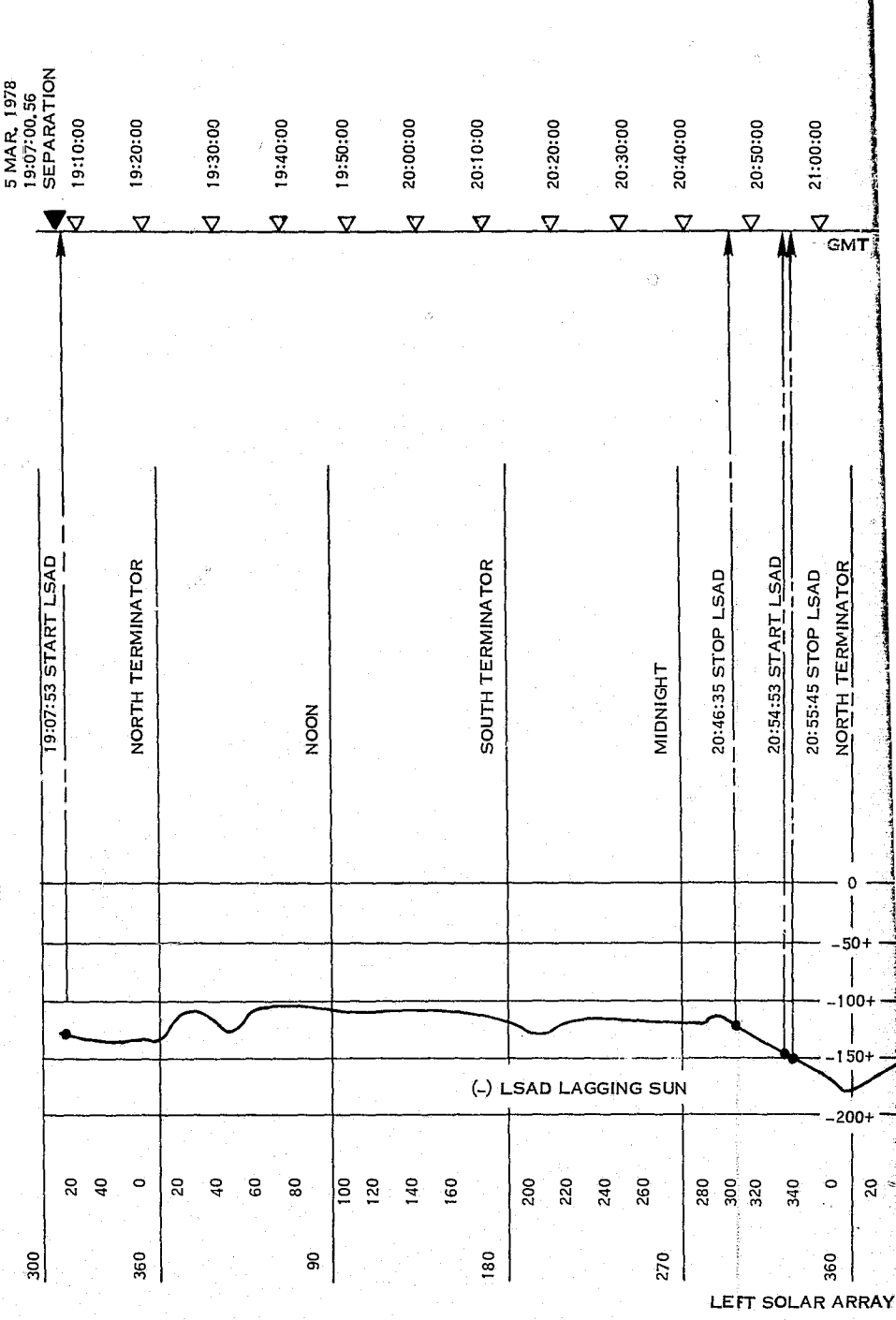

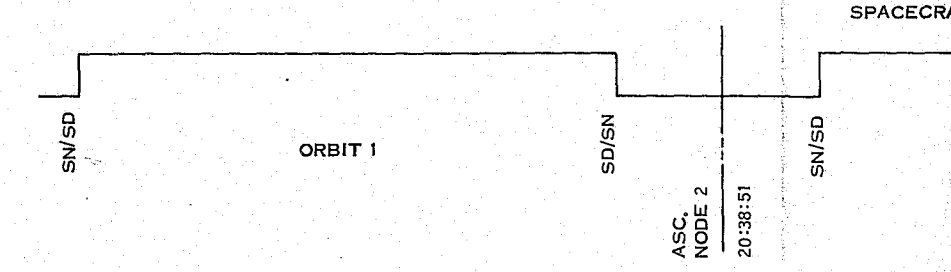

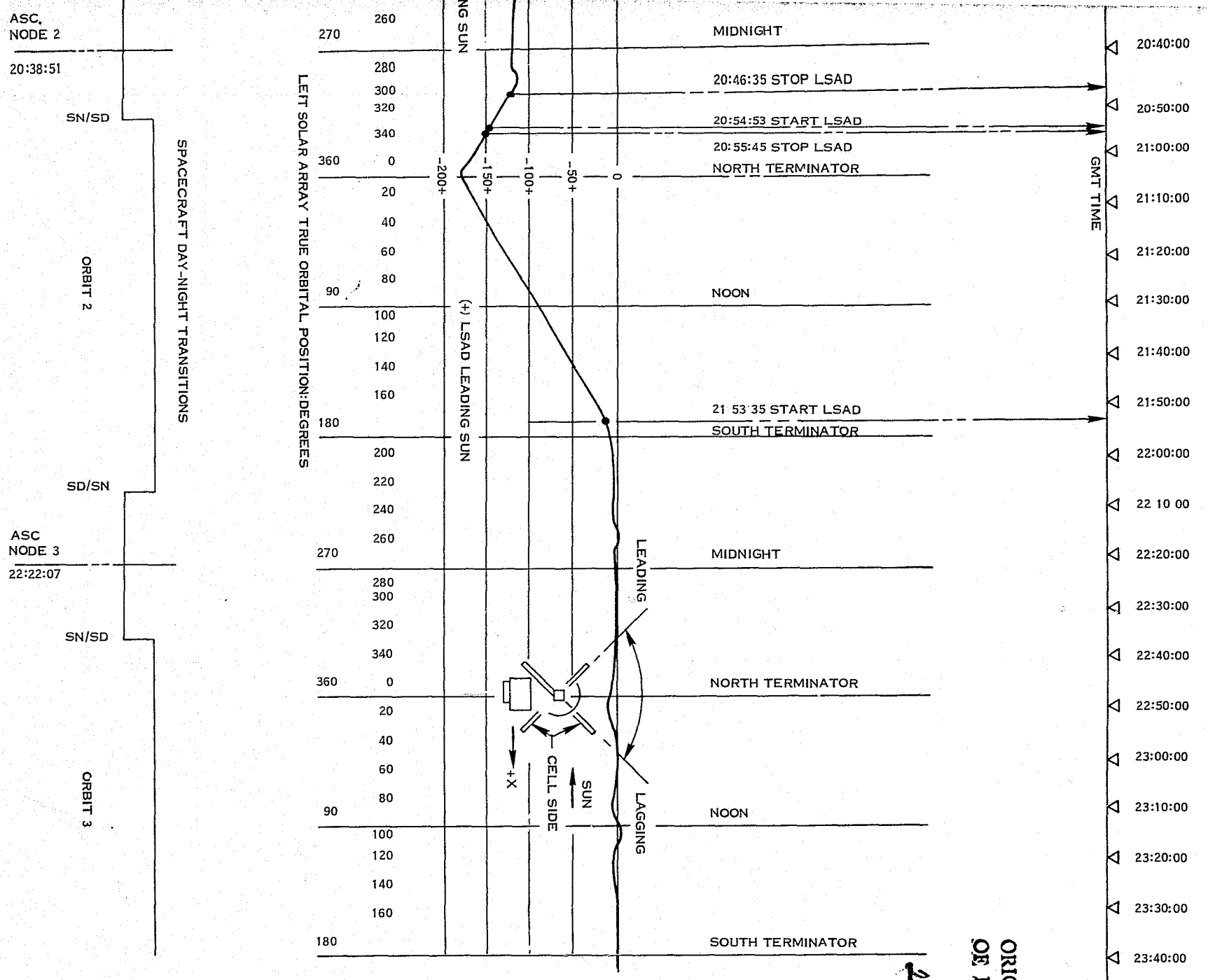

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Figure 6-3. Landsat-3 Left Solar Array Sun Acquisition

Table 6-3. Acquisition Events Summary

Event	GMT Time	Delta Time From Separation
Separation	19:07:00.580	
2.5 Sec. Timer	19:07:03	00:00:02.4
15.0 Sec Timer	19:07:18	00:00:17.4
50.0 Sec Timer	19:07:53	00:00:52.4
Pneumatics Disabled	19:09:38	00:02:37.4
Yaw Rate Normal (Yaw Rate Gyro OFF)	19:09:48	00:02:47.4
RMP 1 OFF	19:43:50	00:36:49.4

Table 6-4. Roll Attitude Acquisition Summary
(Ref. Figure 6-5.)

Event	GMT
ACS ON (15 Sec Tmr)	19:07:18
$\pm$ 5° Deadband	Within Spec. at ACS Activation
Max - Roll Error, -2.59°	19:07:20
Max Roll Rear Flywhl SPD, 1328 RPM	19:07:39
+ Roll Gate	19:07:36
-0.7° Deadband	19:07:53
+0.7° Deadband	Within Spec. Through Damping
Max Roll Fwd Flywhl SPD, 891 RPM	19:08:13
Final Roll Error +0.11°	19:09:19

Table 6-5. Pitch Attitude Acquisition Summary
(Ref. Figure 6-5.)

Event	GMT Time
ACS ON	19:07:18
-5.0° Deadband	19:07:22
Max CCW Whl Speed (-150 RPM)	19:07:30
- Pitch Gate	19:08:09
Max + Pitch Error (+4.82° Within 5° Deadband)	19:08:19
+0.7° Deadband	19:09:07
Max CW Whl Speed (1280 RPM)	19:09:35
-0.7° Deadband	19:09:59
Final Pitch Error (0°)	19:11:26
Momentary Enable (-P)	19:17:11
Momentary Enable (-P)	19:19:47
Momentary Enable (-P)	19:23:40
Momentary Enable (-P)	19:26:03
Whl Out of Saturation	19:26:11
Momentary Enable	19:28:49
Momentary Enable	19:33:00
Whl Below Gating SPO	19:33:01

At 19:07:57 GMT, (3 seconds prior to separation) the freon pressure was recorded at 1949.94 PSIA and its temperature was 18.73°C, therefore, total usable impulse at the beginning of the spacecraft's mission was 547.24 lb sec.

Figures 6-4, 6-5, 6-6 and 6-7 are actual strip chart records of Landsat 3's ACS acquisition.

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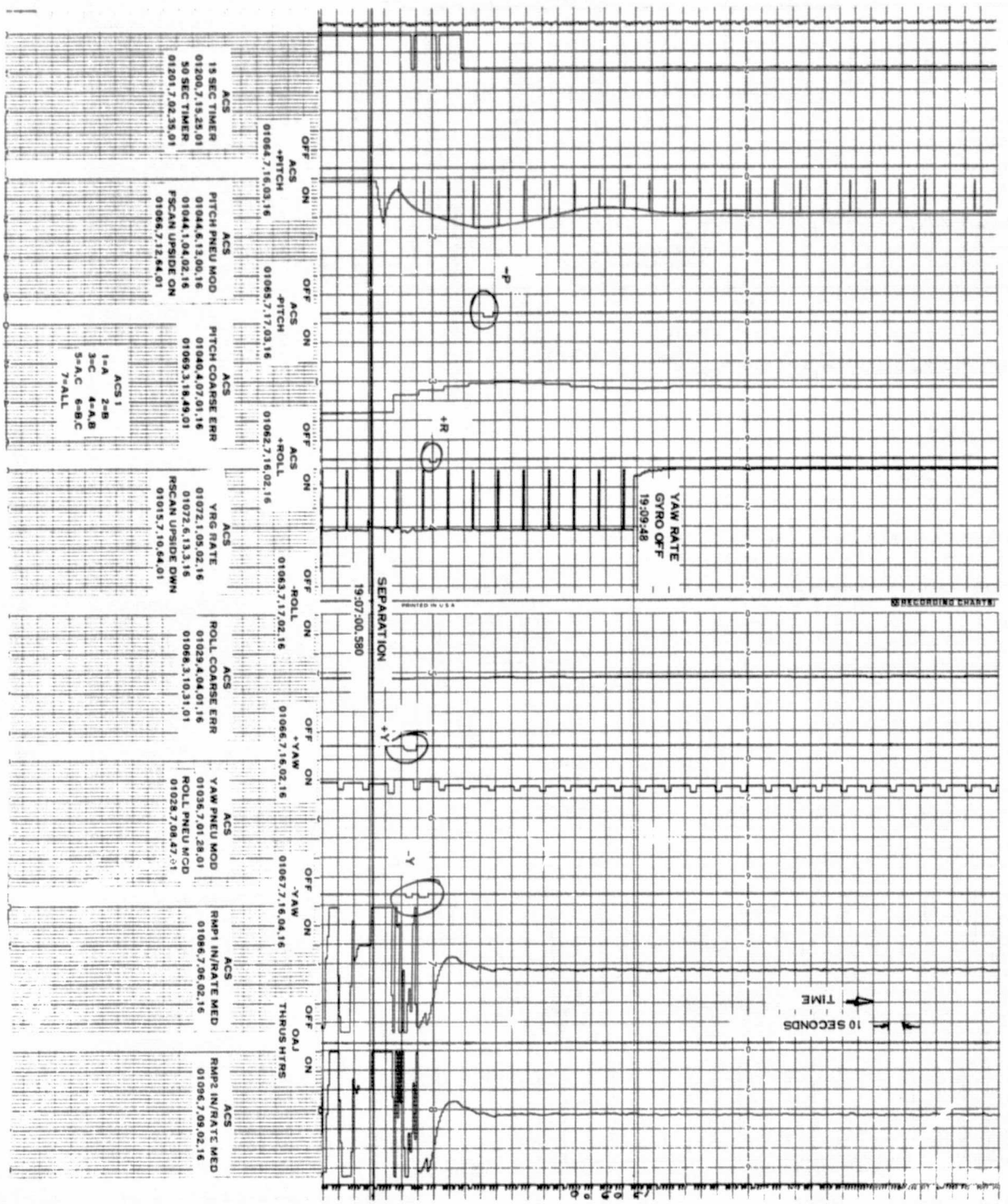

Figure 6-4. Landsat 3's Sun Acquisition

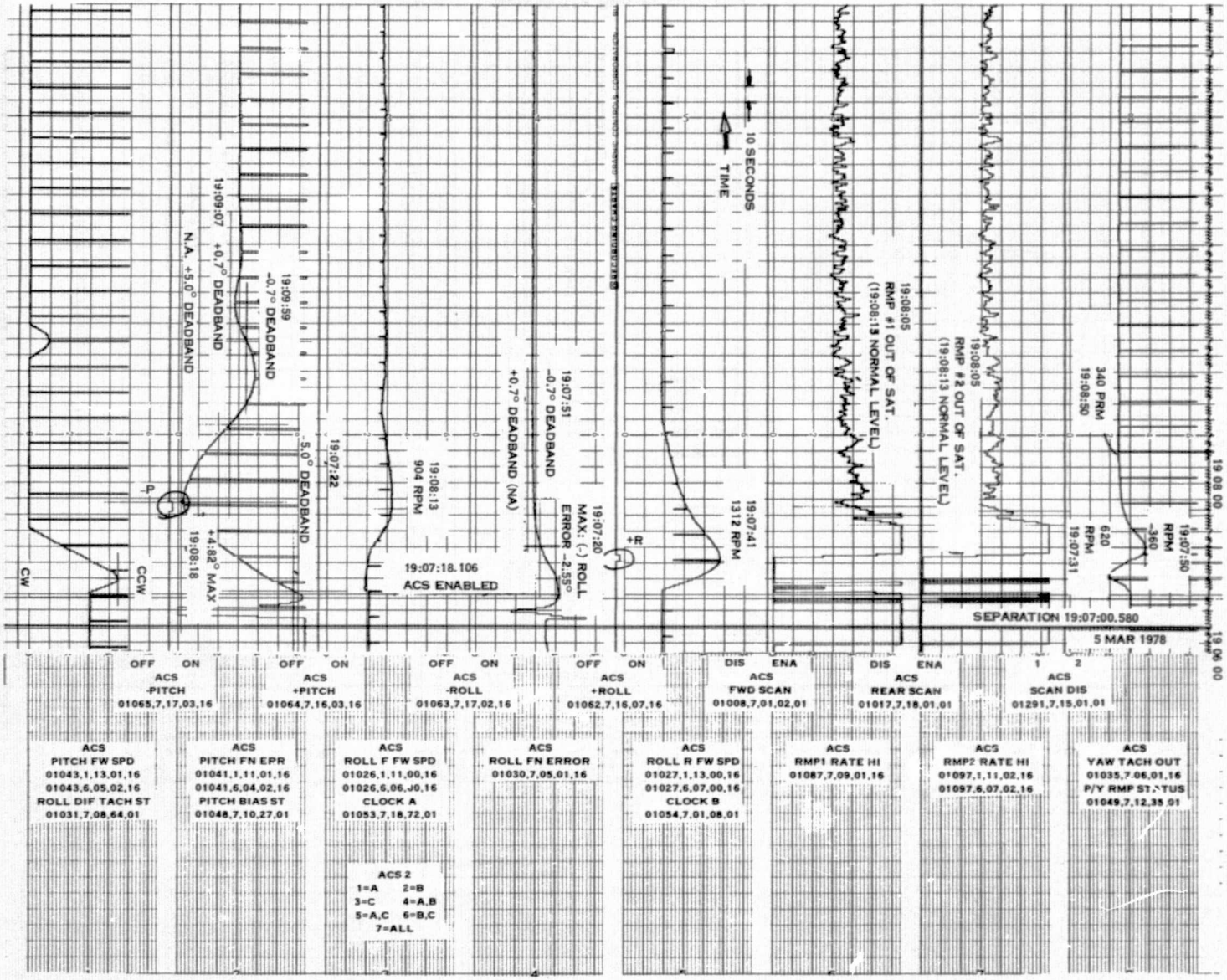

Figure 6-5. Landsat 3's Sun Acquisition

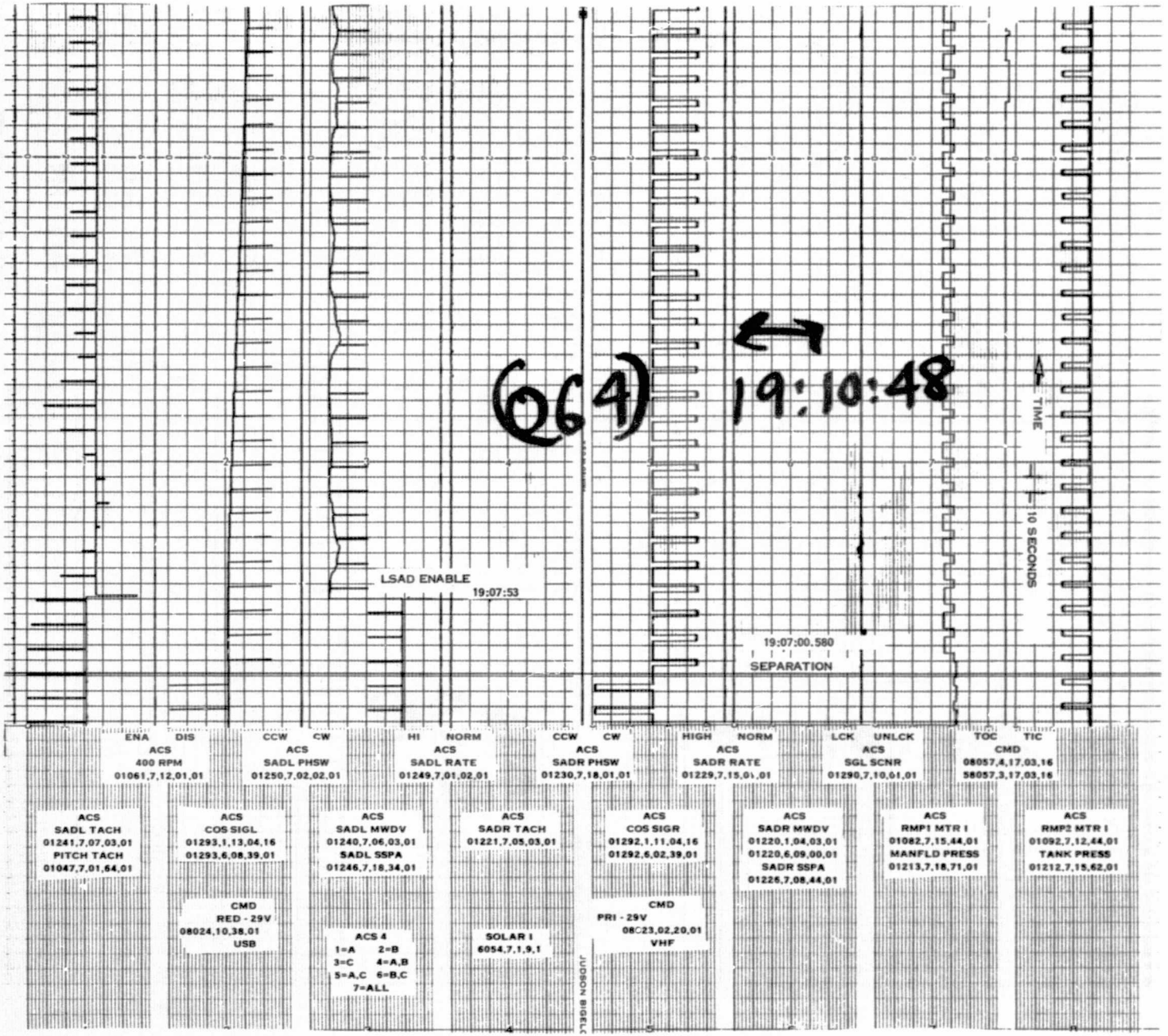

Figure 6-6. Landsat 3's Sun Acquisition

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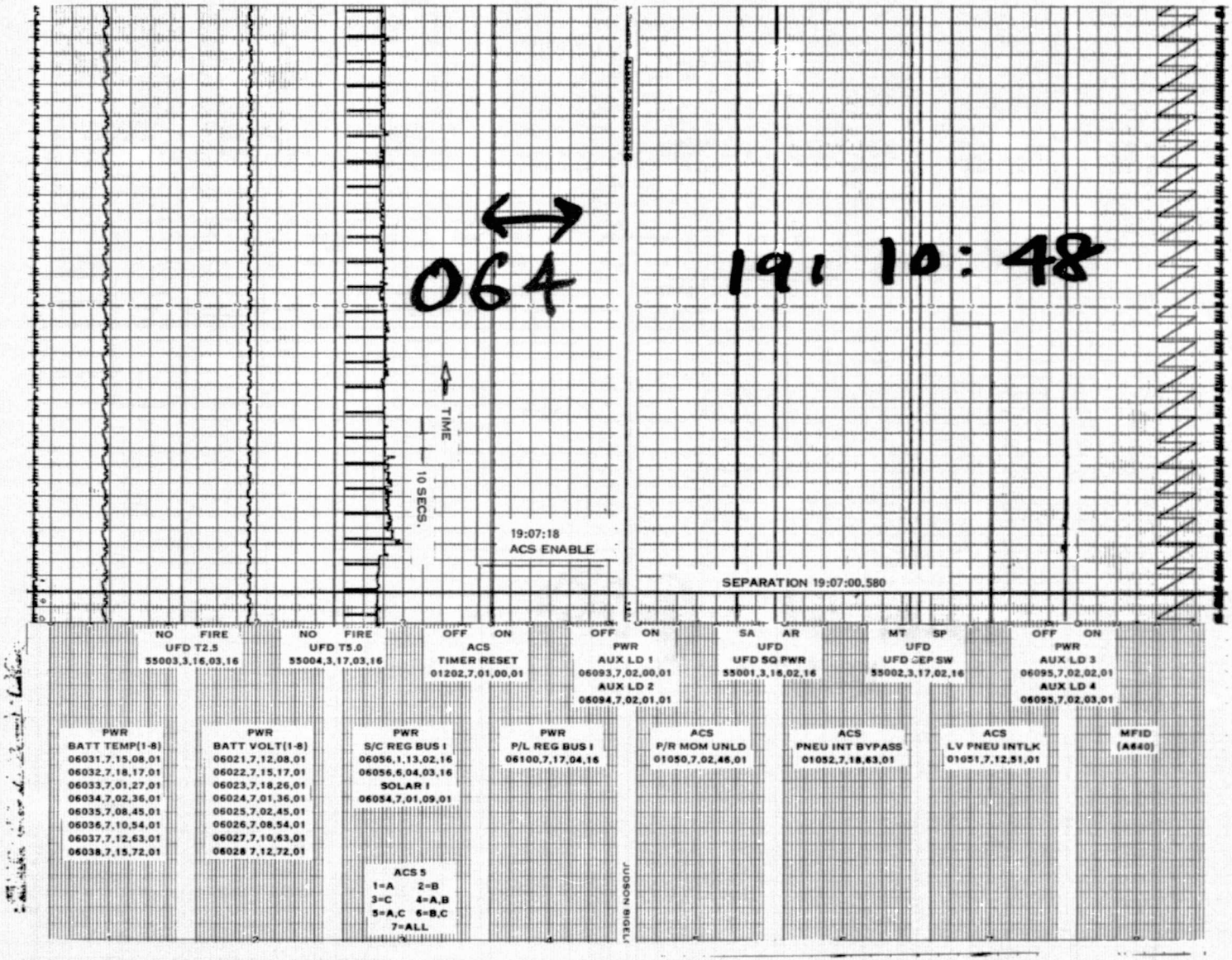

Figure 6-7. Landsat 3's Sun Acquisition

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Table 6-6. Yaw Acquisition Summary
(Ref. Figure 6-5.)

Event	GMT
ACS ON (15 Sec. TMR)	19:07:18
+Y Gate	19:07:19
Yaw Rate Below 0.25^{o}/Sec	Within Spec. at ACS ON, -0.125^{o}/Sec
+Y Gate and -Y Gate	19:07:20
-Y Gate	19:07:25
-Y Gate	19:07:28
Max + Yaw Whl SPD (559 RPM)	19:07:32
Max - Yaw Whl SPD (-334 RPM)	19:07:48
RMP 2 Out of Saturation	19:08:05
RMP 1 Out of Saturation	19:08:15
Final Whl SPD (+ 313 RPM)	19:08:50
Yaw Rate Gyro OFF	19:09:48
RMP 1 OFF	19:43:50

The ACS has performed well since launch. Following stabilization of the spacecraft, the pneumatics were disabled and pneumatic gates in pitch have occurred at a rate of $\approx$11 per calendar day. Roll gating is $\approx$5 per calendar day. Pneumatics unloading is accomplished by stored momentary enable commands. The commands are timed to occur in the umbra and away from the SN/SD and SD/SN transition. The remaining usable impulse at the end of Orbit 50 was 554.104 lb sec. This value is somewhat higher than the initial value (547.24 lb sec) due to the change in temperature resulting from orbit environment and granularity of the telemetry sensor.

Tables 6-7 and 6-8 are summaries of ACS telemetry values recorded during thermal vacuum tests and Flight Orbits 1, 24 and 50.

Temperature and pressure have remained normal. All voltages and currents have been within specified limits (see Table 6-8).

Table 6-9 shows ground measurements of various Attitude Control Subsystem parameters and is included for reference.

Table 6-7. Subsystem Temperature and Pressure Averages

Function	Units	Orbit			
		20°C T/V	1	24	50
1084 RMP 1 Gyro Temperature	DGC	77.5	79.45	18.80	18.78
1094 RMP 2 Gryo Temperature	DGC	76.5	77.10	77.49	77.52
1222 SAD RT MTR HSNG Temp.	DGC	21.92	26.20	21.38	21.32
1242 SAD LT MTR HSNG Temp.	DGC	20.02	23.46	26.48	26.72
1223 SAD RT MTR WNDNG Temp.	DGC	25.00	21.23	19.98	19.94
1243 SAD LT MTR WNDNG Temp.	DGC	23.50	21.30	27.16	27.03
1228 SAD RT HSG Pressure	PSI	7.10	7.00	6.93	6.93
1248 SAD LT HSG Pressure	PSI	7.35	7.17	7.19	7.31
1007 FWD Scanner MTR Temp.	DGC	18.50	20.93	21.55	21.59
1016 Real Scanner MTR Temp.	DGC	24.50	23.96	22.72	22.64
1003 FWD Scanner Pressure	PSI	6.50	7.25	7.27	7.27
1012 Rear Scanner Pressure	PSI	7.2	6.91	6.93	6.93
1212 Gas Tank Pressure	PSI	1950.00	1944.14	1999.94	1999.29
1210 Gas Tank Temperature	DGC	17.50	18.53	19.76	19.70
1213 Manifold Pressure	PSI	58.62	69.83	58.52	59.21
1211 Manifold Temperature	DGC	17.50	18.61	19.85	19.80
1059 CLG Power Supply Card Temp.	DGC	28.95	24.44	32.42	32.36
1260 THO1 EBP	DGC	19.44	22.17	23.19	23.15
1261 THO2 EBP	DGC	16.98	20.09	18.67	18.71
1262 THO3 EBP	DGC	20.36	23.44	16.70	16.64
1263 THO1 STS	DGC	- 9.85	- 4.31	- 2.69	- 1.25
1264 THO2 STS	DGC	- 11.00	-21.51	-24.34	-22.92
1265 THO3 STS	DGC	- 11.28	6.02	3.68	5.33
1266 THO4 STS	DGC	- 7.29	- 1.00	-12.55	- 11.52
1267 THO5 STS	DGC	- 2.71	6.99	4.62	6.37
1224 SAD R FSST	DGC	15.68	6.17	29.10	31.58
1244 SAD L FSST	DGC	5.59	15.43	39.94	40.97

Table 6-8. ACS Voltages and Currents

Function	Units	Orbit			
		T/V +20°C	1	24	50
1081 RMP 1 MTR Volts	VDC	31.80	36.58	F	F
1082 RMP 1 MTR Current	Amps	0.25	0.24	F	F
1080 RMP 1 Supply Volts	VDC	23.49	23.37	F	F
1091 RMP 2 MTR Volts	VDC	30.20	30.46	30.49	30.50
1092 RMP 2 MTR Current	Amps	0.11	0.11	0.11	0.11
1090 RMP 2 Supply Volts	VDC	23.63	23.59	23.65	23.66
1220 SAD RT MTR WNDNG Volts	VDC	4.92	F	4.73	4.64
1240 SAD LT MTR WNDNG Volts	VDC	5.55	6.66	6.37	6.30
1227 SAD RT -15 VDC Conv.	VDC	15.47	F	15.48	15.48
1247 SAD LT -15 VDC Conv.	VDC	14.94	14.94	14.94	14.93
1056 CLB ± 6 VDC	TMV	2.35	2.35	2.35	2.35
1055 CLB ± 10 VDC	TMV	2.90	2.88	2.89	2.88
1057 CLB Power Supply Volts	TMV	2.95	2.95	2.95	2.94

F = Unit OFF

Table 6-9. Attitude Control Subsystem

Parameter	Spec	Pre-Launch Measurement
15 Second Timer	14.4 to 18 Sec	15 Secs
50 Second Timer	42.5 to 57.5 Sec	49 Secs
Pitch Pneu. Threshold	5.5° ± 0.8°	5.83°
Roll Pneu. Threshold	5.1° ± 0.8°	5.70°
Yaw Pneu. Threshold	0.07 to 0.13°/Sec	0.1°/Sec
Pitch Position Bias	4.7 ± 0.5°	5.05°
Left Solar Array Drive		
Normal Rate	3.33 ± 0.33°/Min	3.32°/Min
High Rate	3.90 ± 0.4°/Min	3.87°/Min
Right Solar Array Drive		
Normal Rate	3.33 ± 0.33°/Min	3.42°/Min
High Rate	3.9 + 0.4°/Min	3.96°/Min
Momentum Bias Speed	1060 ± 150 RPM	1090 RPM
Pneumatics		
Primary Seat Leak	1 SCC/Hr	-0.29
External Leak	10 SCC/Hr	< 0.1 SCC/Hr

SECTION 7

TELEMETRY SUBSYSTEM (TLM)

The Narrow Band Telemetry samples, encodes, formats, and transmits data from spacecraft service and payload subsystem to earth receiving stations. The subsystem processes and coherently retransmits an S-Band signal, including a ranging code for use in orbit determination. The subsystem provides timing and synchronizing signals to spacecraft service and payload subsystems. See Figure 7-1 and 7-2 for functional block diagram, and Figure 7-3 for hardware illustration. The units in this subsystem are closely associated with those described in Section 11, Unified S-Band/Premodulation Processor, and Section 8, Command/Clock Subsystem.

The Telemetry subsystem was launched in the ON mode and has been operating continuously providing data from the spacecraft either to ground stations, to the narrow band recorders, or to both. The launch configuration is given in Table 7-1 and typical telemetry values in Table 7-2. Total performance has been excellent. Prelaunch performance is shown in Table 7-3 for the VHF transmitter.

Table 7-1. Telemetry Subsystem Launch Mode

TMP Subsystem			
POWER A	ON	260	ANALOG & DIGITAL A
OUTPUT	ON	261	OUTPUT CIRCUIT A
FORMAT	ON	262	SELECT FORMAT 1
LOGIC	ON	300	CONTROL LOGIC A
POWER	ON	340	POWER A ON/B OFF
BI-LEVEL MUX	ON	341	BI-LEVEL MUX A ON
ANALOG MUX A1	ON	342	ANALOG MUX A1 ON
ANALOG MUX A2	ON	401	ANALOG MUX A2 ON
VHF Transmitter			
VHF MODE	RT	207	VHF MODE RT
VHF PB O/R	ON	230	NONE
VHF RF PWR	LO	210	VHF XMTR A-LO
VHF PWR 1	ON	206	
VHF PWR 2	ON	170	
VHF XMTR	A	231	

Table 7-2. TMP Telemetry Values

Function	Function Name	Unit	Orbit			
			20° T/V	0/1	33	50
09001	Power Supply A +5V	TMV	4.70	4.70	4.70	4.70
09002	Power Supply B +5V	TMV	4.64	F	F	F
09003	Power Supply A +15V	TMV	4.90	4.90	4.90	4.90
09004	Power Supply B +15V	TMV	4.85	F	F	F
09005	Power Supply A -6V	TMV	5.65	5.65	5.65	5.65
09006	Power Supply B -6V	TMV	5.62	F	F	F
09007	Power Supply A -15V	TMV	4.97	4.97	4.97	4.97
09008	Power Supply B -15V	TMV	4.95	F	F	F
09009	Power Supply A -22V	TMV	5.35	5.35	5.35	5.35
09010	Power Supply B -22V	TMV	5.30	F	F	F
09011	Power Supply A +6V	TMV	4.82	4.82	4.82	4.82
09012	Power Supply B +6V	TMV	4.80	F	F	F
09013	Power Supply A Temp	DGC	N	28.60	26.66	27.10
09014	Power Supply B Temp	DGC	N	25.75	25.10	25.34
09015	Temperature C	DGC	N	21.20	19.19	20.18
09100	Reflected Power "A"	dBm	6.70	5.11	7.61	7.95
09100	Reflected Power "B"	dBm	6.33	F	F	F
09101	XMTR A -20 VDC	TMV	3.82	3.87	3.87	3.87
09102	XMTR B -20 VDC	TMV	3.84	F	F	F
09103	XMTR A - Temp	DGC	19.50	19.80	21.01	20.90
09104	XMTR B - Temp	DGC	20.00	20.63	21.89	21.79
09105	XMTR A Power Output	dBm	28.12	28.47	28.72	28.74
09106	XMTR B Power Output	dBm	26.58	F	F	F

N - Data Not Available
F - Unit OFF

Table 7-3. VHF Transmitter

Component

VHF Transmitter PR002

Pre-Launch Performance

1 KBPS real time
24 KBPS playback — Data Good

	Spec	A	B
Power Output - Low Mode	300 MW (24.8 dBm)	580 MW (27.8 dBm)	550 MW (27.5 dBm)
High Mode	2 W (32.0 dBm)	2.5 W (34.0 dBm)	2.9 W (34.8 dBm)

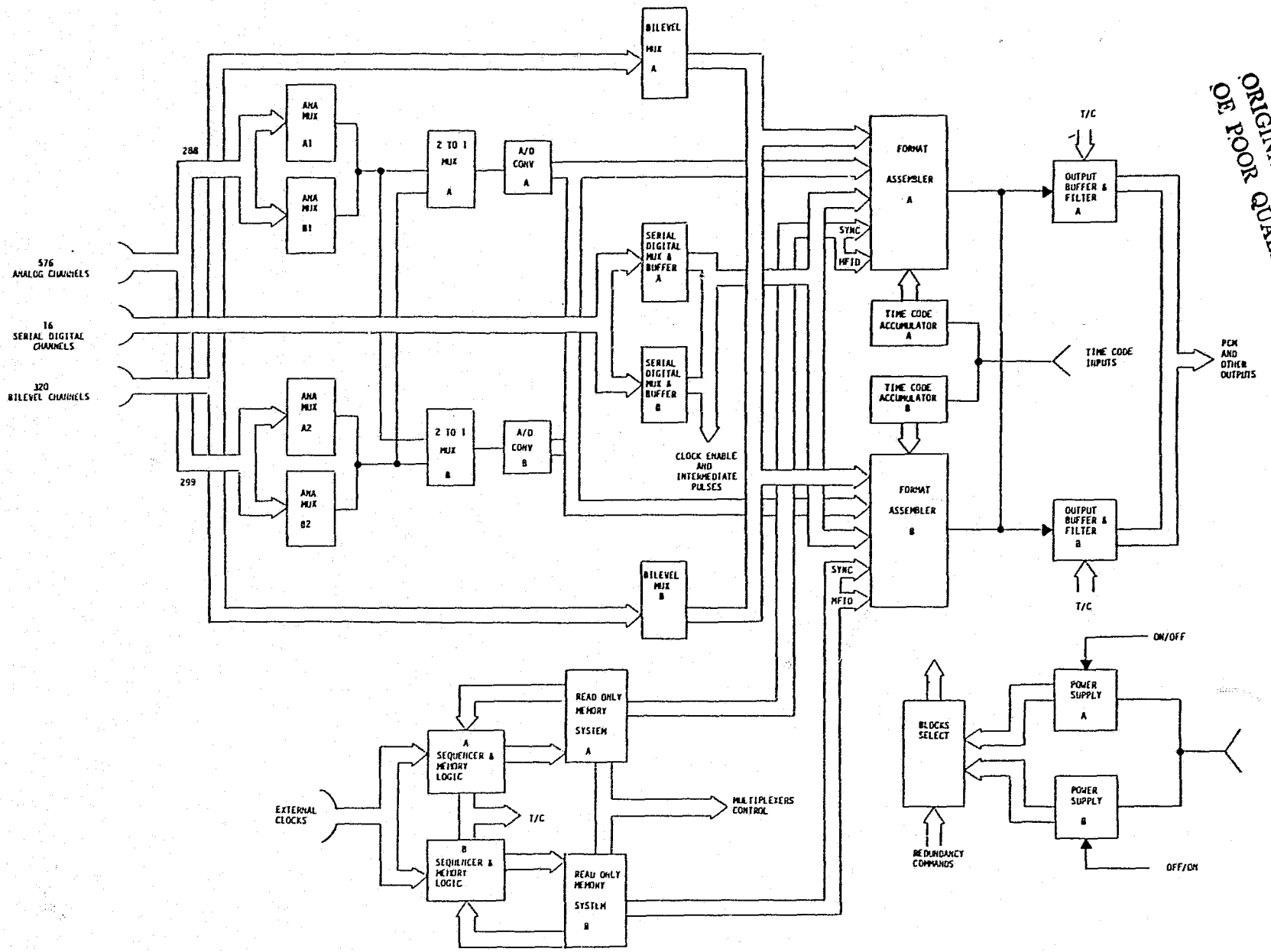

Figure 7-1. Telemetry Processor Functional Block Diagram

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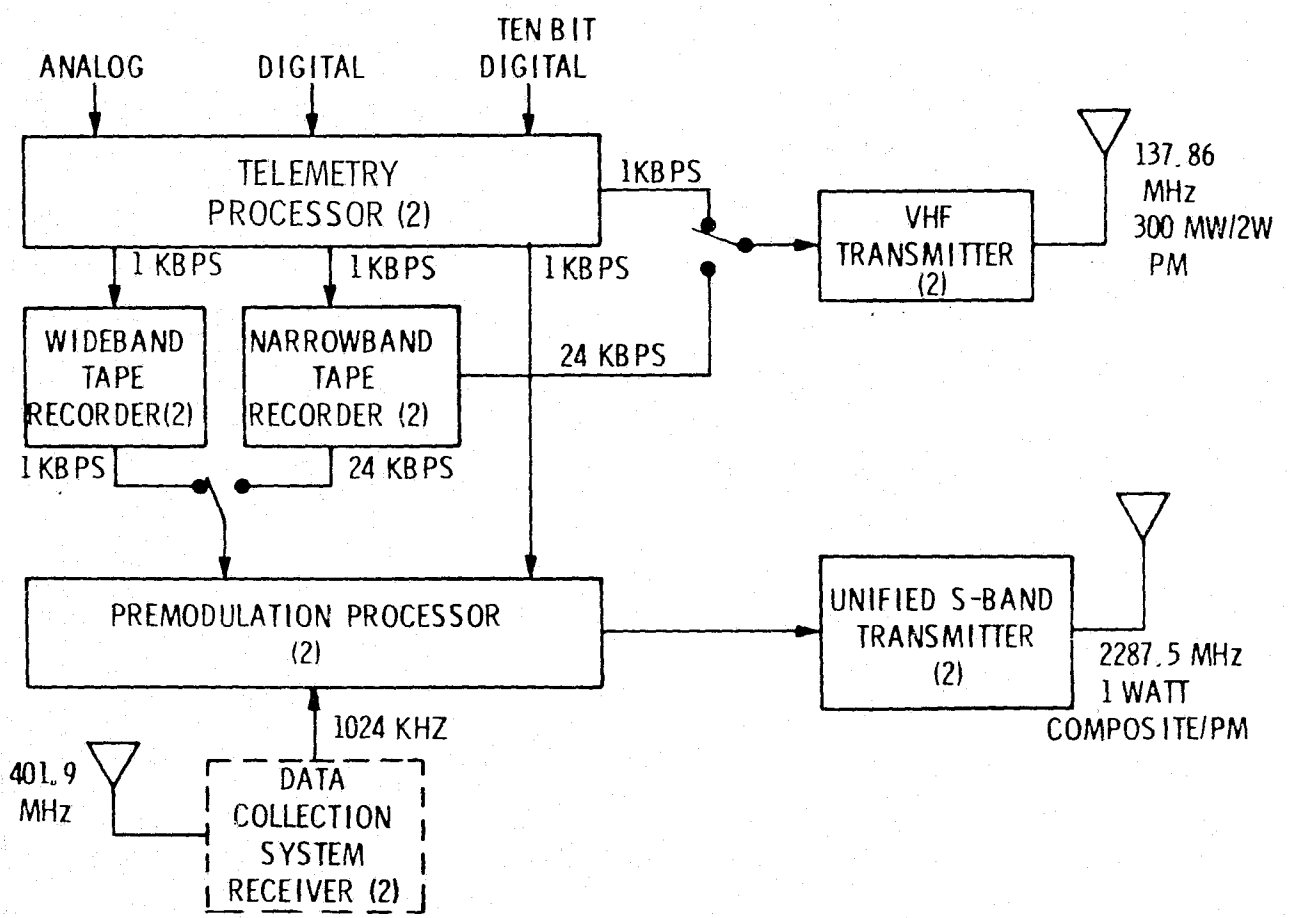
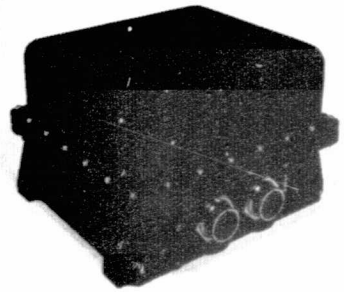
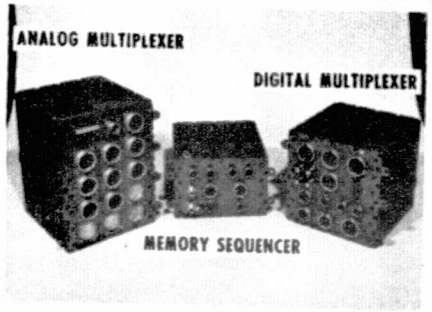
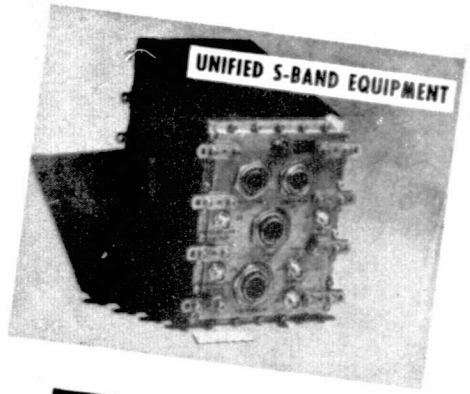


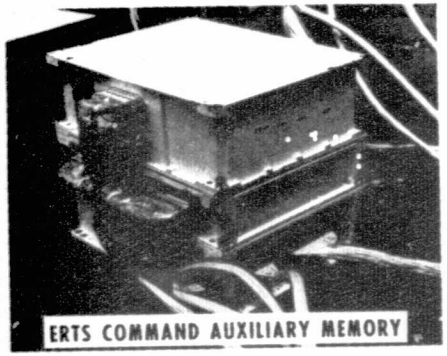
Figure 7-2. Narrowband Telemetry and Command Subsystem Block Diagram (Down Link)



NARROWBAND TAPE RECORDER







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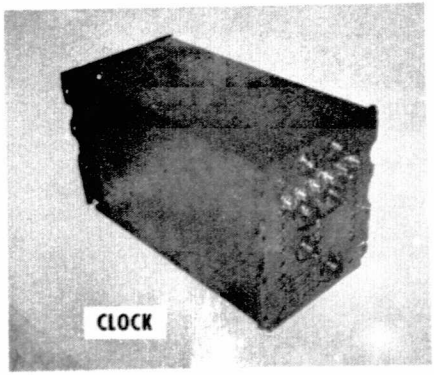

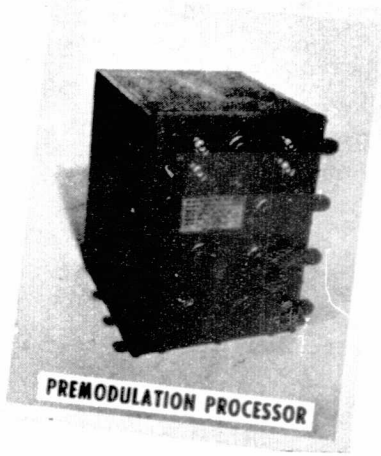

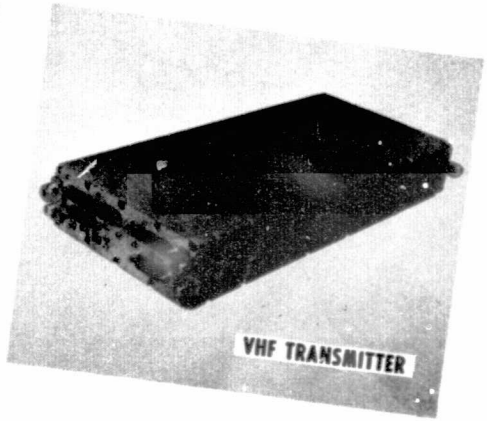

Figure 7-3. Narrowband Telemetry and Command Subsystem

SECTION 8
COMMAND/CLOCK SUBSYSTEM (CMD/CLK)

The Command and Clock Subsystem consists of the following modules: VHF Receiver; Command Integration; Command Clock; and ECAM. The first three modules are located in the sensory ring, and ECAM is located inside the USB antenna mount. Parts of two other modules (unified S-Band Equipment and Premodulation Processor) provide one of the two primary inputs to the Command and Clock Subsystem, but are not considered part of the subsystem.

The Command and Clock Subsystem performs the following functions:

1. Receives, processes, and stores command information from the USB and VHF ground station.
2. Receives, processes, and stores command information from the USB and VHF ground stations and executes these commands at the predetermined time.
3. Receives and transfers serial data to the ECAM for program loads, stored commands and ECAM internal commands.
4. Provides an accurate time base upon which all spacecraft activities can be planned, referenced, and measured.
5. Generates Minitrack 36-bit time code data which is stored and transmitted with TMP, RBV, and MSS data so that the time reference cited above may be used to process data in the ground station.
6. Generates standard frequencies and motor drive signals used by other subsystems.

The Landsat-3 System Command Matrix provides for 512 commands as noted in Appendix B.

Figure 8-1 is a simplified block diagram and Figure 8-2 is a modulation format.

The Landsat-3 command subsystem was launched in the configuration given in Table 8-1, and activated with the separation and unfold contact closure which occured at 19:07:00 GMT near Winkfield in Orbit 1.

A summary of telemetry values is provided in Table 8-2. Flight data correlated very closely with Thermal Vacuum test data values.

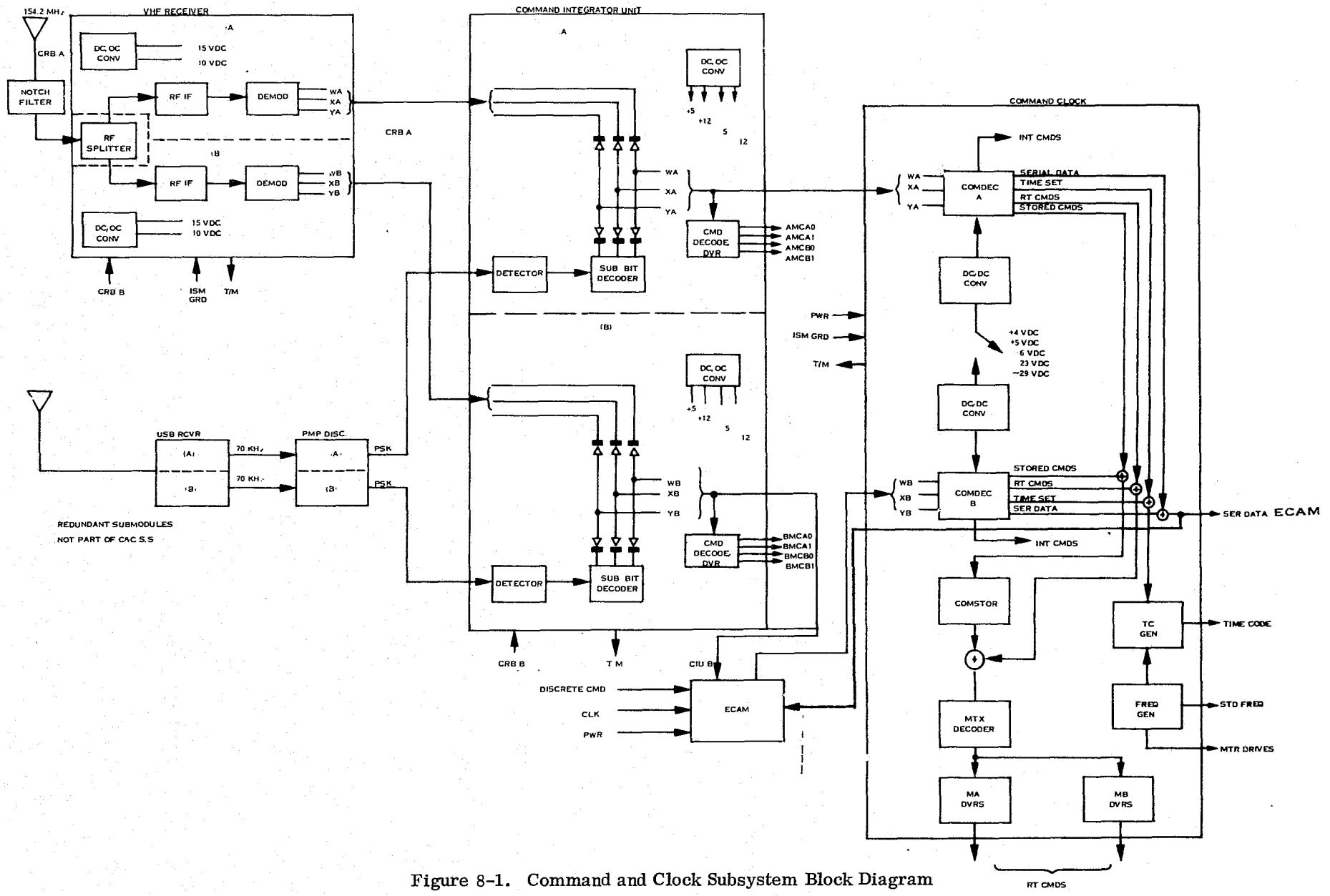

Figure 8-1. Command and Clock Subsystem Block Diagram

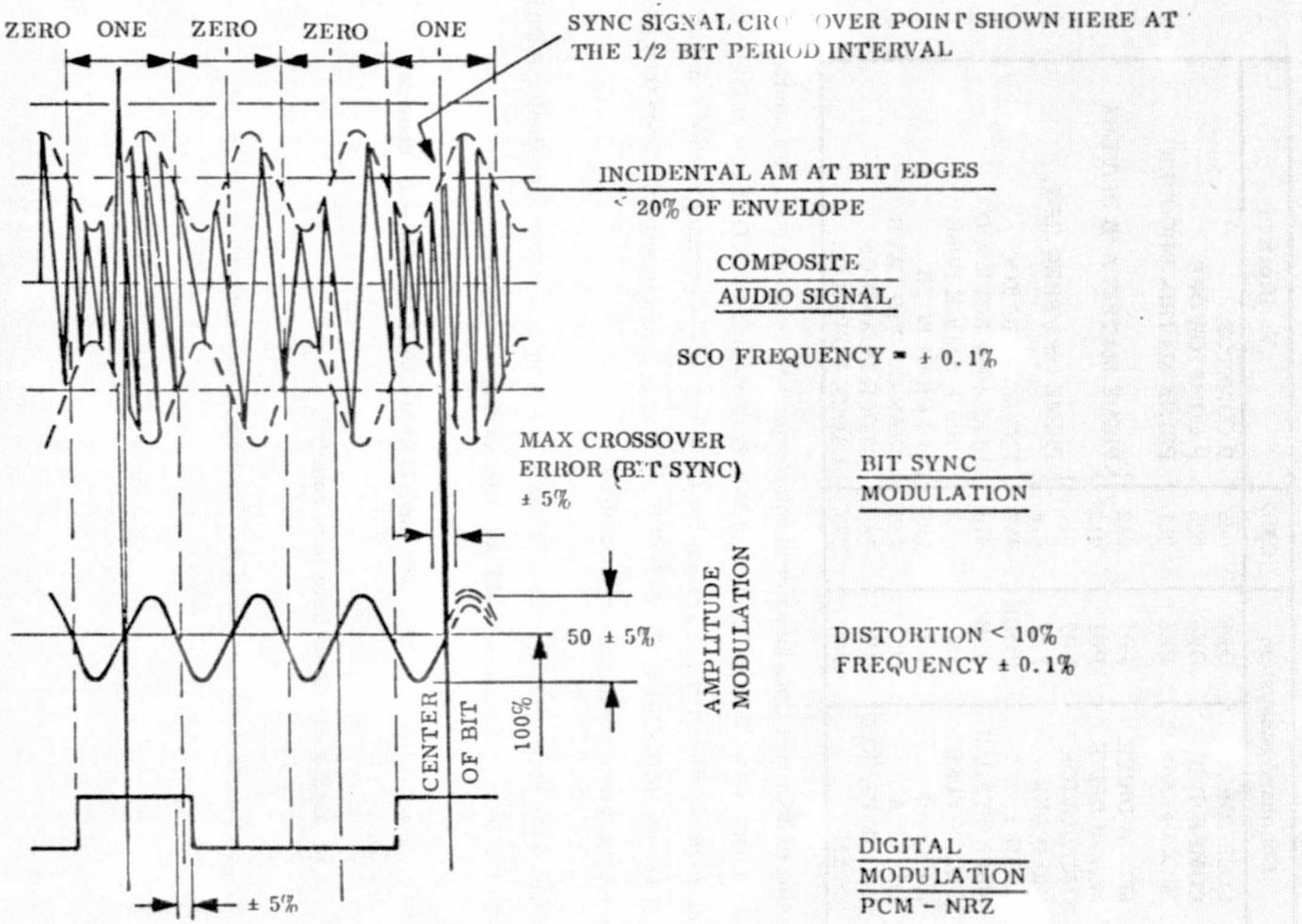

Figure 8-2. Composite STADAN Audio Waveform

Table 8-1. Command/Clock Subsystem Launch Mode

Command Subsystem		CMD	Verification
COMSTOR A	OFF	005	P COMSTOR
COMSTOR B	OFF	025	P COMSTOR OFF
MTX DECODER	PRI	011	PRIME MATRIX DECODER
MTX A DRIVE	PRI	012	PRIME MATRIX A/B DRIVERS
MTX B DRIVE	PRI	013	
OSCILLATOR	PRI	014	PRIME OSC/FREQ GEN
FREQ GEN	PRI	015	
VERIFY	TOCK	457	FN8057 - TIC TOC
MSFN/STADAN	A/B	616	DISC A ON RCVR A ON
CLOCK FUSE	1A	653	PRIME CLOCK FUSE
CIU CH B	ON	782	CIU CHAN BOTH
CIU CH A	ON	786	CHAN CONFIG UAVB
CLOCK PS/COM	ON	783	CLOCK POWER ON
ECAM	OFF	220	CLOCK POWER ON

Command processing of both real time and stored commands have been normal. No spurious or unexecuted commands have been observed. During Orbit 40 (8 March 1978) Cell 4 of COMSTOR B failed to verify. In Orbit 44, 8 March 1978, verification was normal but the PMP "ON" Command in Cell 4 did not execute. During Orbit 48 (9 March 1978) Cell 4, COMSTOR B once again failed to verify. Since then dummy commands have been inserted as a precautionary measure.

The time base provided for spacecraft activities planning has been well within specifications during this period. Clock drift has been less than +1.6 MS per orbit during this period.

Spacecraft time code, transmitted via RBV, MSS, and TLM has been reliable and accurate.

All frequency outputs to other subsystems have been nominal.

Table 8-3 shows the pre-launch performance of the Command Clock subsystem.

Table 8-2. Command/Clock Telemetry Summary

Function No.	Name	Mode	Units	20° T/V	0/1	34	50
8005	Pri. Power Supply Temp.	-	DGC	38.92	34.82	41.25	41.53
8006	Red. Power Supply Temp.	-	DGC	38.05	34.24	41.59	41.92
8007	Pri. Osc. Temp.	-	DGC	34.42	27.67	30.28	30.34
8008	Red Osc. Temp.	-	DGC	35.50	38.36	31.21	31.09
8009	Pri. Osc. Output	-	TMV	1.08	1.05	1.05	1.05
8010	Red. Osc. Output	-	TMV	1.25	1.21	1.24	1.24
8011	100 KHz	Pri. - Red.	TMV	3.13	3.10	3.13	3.13
8012	10 KHz	Pri. - Red.	TMV	3.05	3.05	3.07	3.06
8013	2.5 KHz	Pri. - Red.	TMV	2.93	2.94	2.95	2.95
8014	400 Hz	Pri. - Red.	TMV	4.45	4.42	4.45	4.45
8015	Pri. ∕ 4V Power Supply	Pri. Clk ON	VDC	2.05	2.03	2.05	2.05
8016	Red. ∕ 4V Power Supply	Red. Clk ON	VDC	1.97	1.95	1.97	1.97
8017	Pri. ∕ 6V Power Supply	Pri. Clk ON	VDC	2.27	2.25	2.28	2.27
8018	Red. ∕ 6V Power Supply	Red. Clk ON	VDC	2.25	2.25	2.25	2.25
8019	Pri. - 6V Power Supply	Pri. Clk ON	VDC	5.25	5.23	5.25	5.25
8020	Red. - 6V Power Supply	Red. Clk ON	VDC	5.23	5.22	5.23	5.23
8021	Pri. - 23V Power Supply	Pri. Clk ON	VDC	5.69	5.70	5.70	5.70
8022	Red. - 23V Power Supply	Red. Clk ON	VDC	5.80	5.80	5.80	5.80
8023	Pri. - 29V Power Supply	Pri. Clk ON	VDC	5.42	5.42	5.42	5.43
8024	Red. - 29V Power Supply	Red. Clk ON	VDC	5.38	5.38	5.38	5.39
8101	CIU A - 12V	CIU A ON	VDC	3.95	3.95	3.95	3.95
8102	CIU B - 12V	CIU B ON	VDC	3.98	3.98	3.98	3.98
8103	CIU A - 5V	CIU A ON	VDC	4.12	4.11	4.12	4.12
8104	CIU B - 5V	CIU B ON	VDC	4.15	4.15	4.15	4.15
8105	CIU A Temp.	CIU A ON	DGC	26.06	20.98	22.53	22.36
8106	CIU B Temp.	CIU B ON	DGC	22.88	19.06	20.36	20.27
8201	Receiver RF-A Temp.	-	DGC	29.90	28.73	28.70	28.51
8202	Receiver RF-B Temp.	-	DGC	26.01	22.99	21.74	21.52
8203	D MOD A Temp.	-	DGC	38.10	35.15	36.00	36.09
8204	D MOD B Temp.	-	DGC	32.32	25.46	25.27	25.34
8205	Receiver A AGC	Receiver A ON	DBM	-79	-81.34	-84.89	-89.71
8206	Receiver B AGC	Receiver B ON	DBM	-76	F	F	F
8207	Amp. A Output	Receiver A ON	TMV	1.47	1.98	2.41	2.35
8208	Amp. B Output	Receiver B ON	TMV	1.46	F	F	F
8209	Freq. Shift Key A Out	Receiver A ON	TMV	1.08	1.08	1.09	1.08
8210	Freq. Shift Key B Out	Receiver B ON	TMV	1.12	F	F	F
8211	Amp. A Output	Receiver A ON	TMV	1.11	1.10	1.12	1.10
8212	Amp. B Output	Receiver B ON	TMV	1.10	F	F	F
8215	D MOD A - 15V	Receiver A ON	TMV	5.02	5.00	5.01	5.00
8216	D MOD B - 15V	Receiver B ON	TMV	5.05	F	F	F
8217	Regulator A - 10V	Receiver A ON	TMV	5.55	5.52	5.52	5.51
8218	Regulator B - 10V	Receiver B ON	TMV	5.58	F	F	F
8311	ECAM Memory Temp	ECAM-ON	DGC	20.90	15.76	16.18	17.92
8312	ECAM Pwr Sup Temp	ECAM-ON	DGC	25.64	17.72	19.59	19.95

F = Unit OFF

Table 8-3. Command and Clock Subsystem Pre-Launch Performance Summary

- ALL OPERATIONAL MODES EXERCISED SATISFACTORILY
- BOTH COMSTORS OPERATED. ALL STORED COMMANDS EXECUTED PROPERLY
- ALL CIU COMMANDS EXECUTED PROPERLY
- NO TIME CODE OR CLOCK FREQUENCY ANOMALIES
- ALL SERIAL DATA COMMANDS TO ECAM OPERATED PROPERLY
- ALL ECAM STORED COMMAND LOCATIONS (512) EXERCISED. ALL ECAM STORED COMMANDS EXECUTED PROPERLY.
- ALL ECAM SMART FUNCTIONS EXERCISED AND FUNCTIONED PROPERLY.
- VHF RCVR THRESHOLD

SPEC	A	B	MARGIN
-107 DBM	-111	-109	31.6 DB

SECTION 9

ORBIT ADJUST SUBSYSTEM (OAS)

The Orbit Adjust Subsystem (OAS) is a monopropellant hydrazine fueled propulsion system consisting of three thruster assemblies, a propellant feed system, a support structure and the necessary interconnect plumbing, brackets, and electrical harnessing. The propellant feed system consists of a single tank for storage of both the propellant and pressurant. The feed system operates in a blow-down mode during which the engine thrust decays from an initial level of 0.85 LB_f to a final value of 0.25 LB_f as the 67 LB_m of propellant is consumed.

The operation of the propulsion subsystem permits the flow of hydrazine propellant into a combustion chamber containing a catalyst. Within the chamber, the catalyst spontaneously decomposes the hydrazine into ammonia, hydrogen, and nitrogen gases having a temperature of approximately 1800°F. These gases are then expanded through a conical nozzle to produce thrust. See Figures 9-1 for a functional block diagram and Figures 9-2 and 9-3 for hardware configuration. See also PIR-1M05-L/C-3228 in Appendix E for detail thruster alignment data.

The OAS was launched in the OFF mode and remained OFF except as noted in Table 9-1.

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Table 9-1. Landsat 3 Orbit Adjust Summary

					Freon Post Burn		Hydrazine					
Orbit Adjust No.	Orbit No.	Epoch (Burn Start Time)	Burn Axis	Burn Duration sec	Tank Temp °C	Tank Press psia	Tank Temp °C	Tank Press psia	Mass Used lbs	Burn Efficiency %	Δa Meters	Δi Degrees
1	26	7 March 1978 14:33:06.2	+X	5.2	N	N	N	N				0.0
2	26	7 March 1978 14:40:01.2	-X	5.2	20.40	2006.12	18.89	532.44	1.75	107.1	-3662	
3	30	7 March 1978 21:23:01.2	+X	420	20.51	2012.09	18.89	487.01				0.0
4	109	13 March 1978 13:16:01.2	-X	660	21.49	2004.51	15.56	424.10	2.50	103.7	+4933	0.0
5	115	13 March 1978 23:43:09.2	-X	112	21.80	2016.25	15.56	416.58	0.42	108.1	+804	0.0

N = Not Available

In Orbit 26 a 5.2 sec test burn was performed to test the performance and alignment of the +X thruster and the -X thruster. In both cases the firing was normal. In Orbit 30 an orbit adjust sequence for Landsat-3 was initiated to phase the satellite with Landsat-2 to a 9 day/9 day pattern in the 18 day ground track repeat cycle. A burn on the +X thruster in this orbit lasted for 420 seconds, and was normal in all respects. The

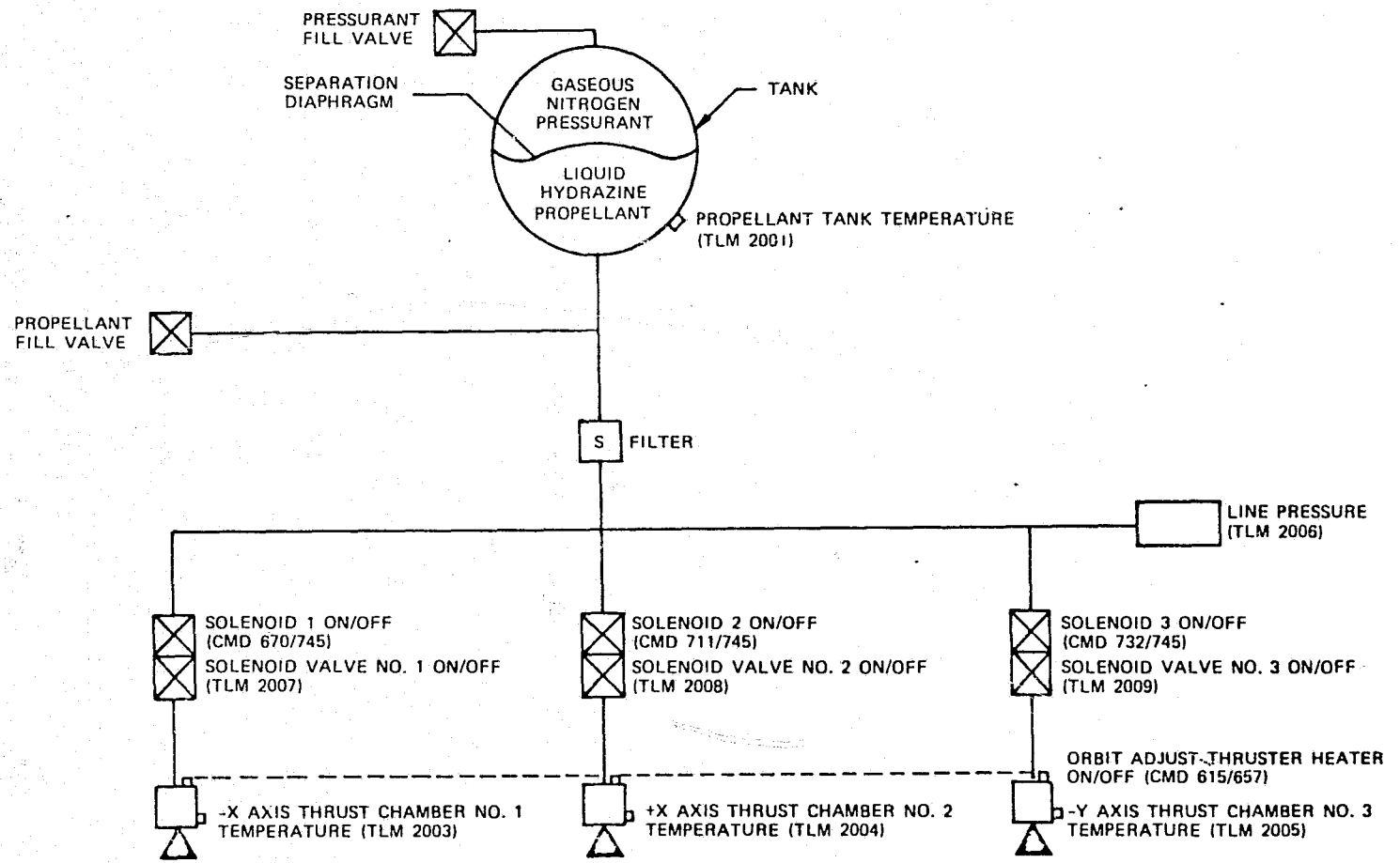

Figure 9-1. Orbit Adjust Subsystem Block Diagram

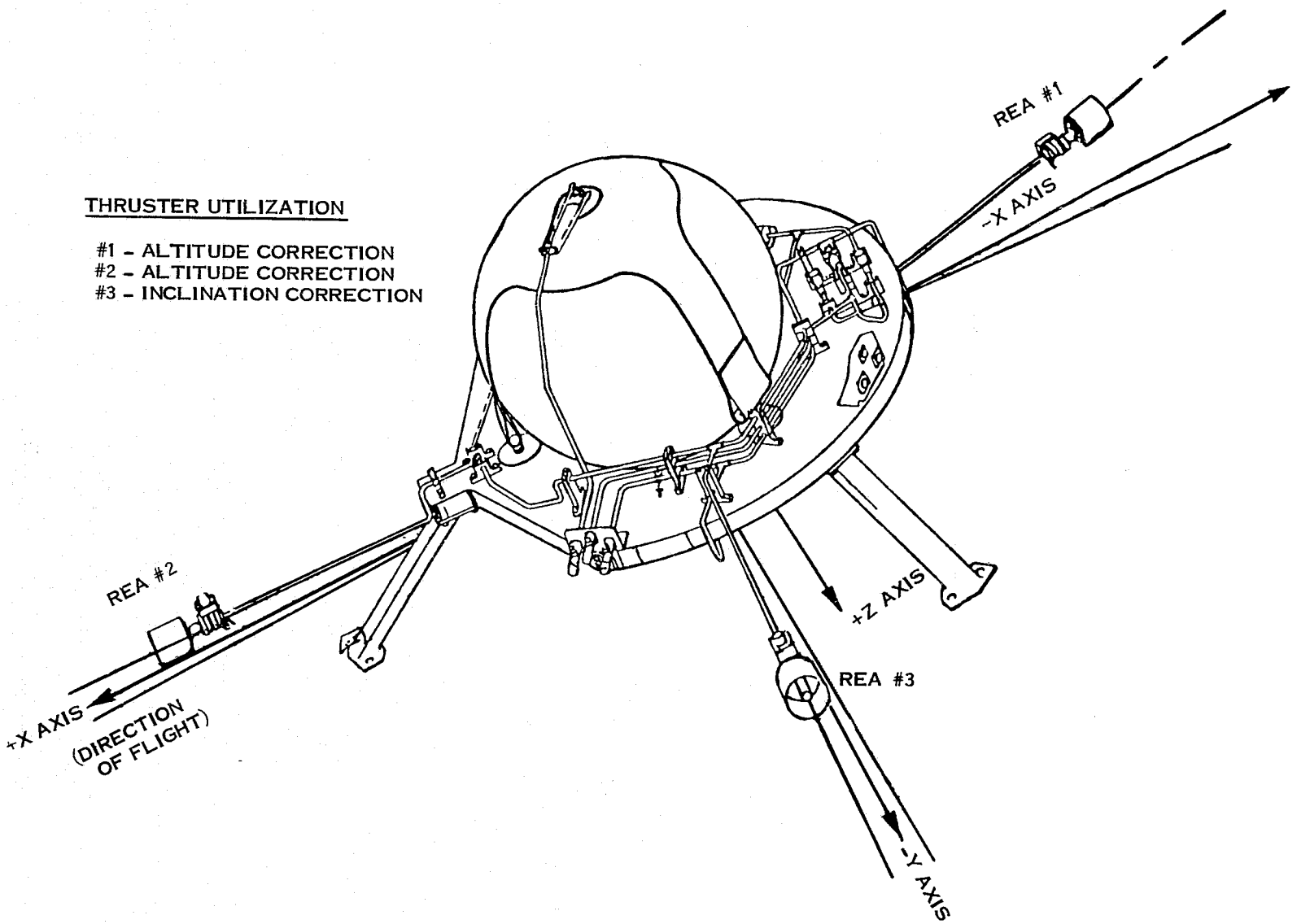

Figure 9-2. Orbit Adjust Thruster Orientation

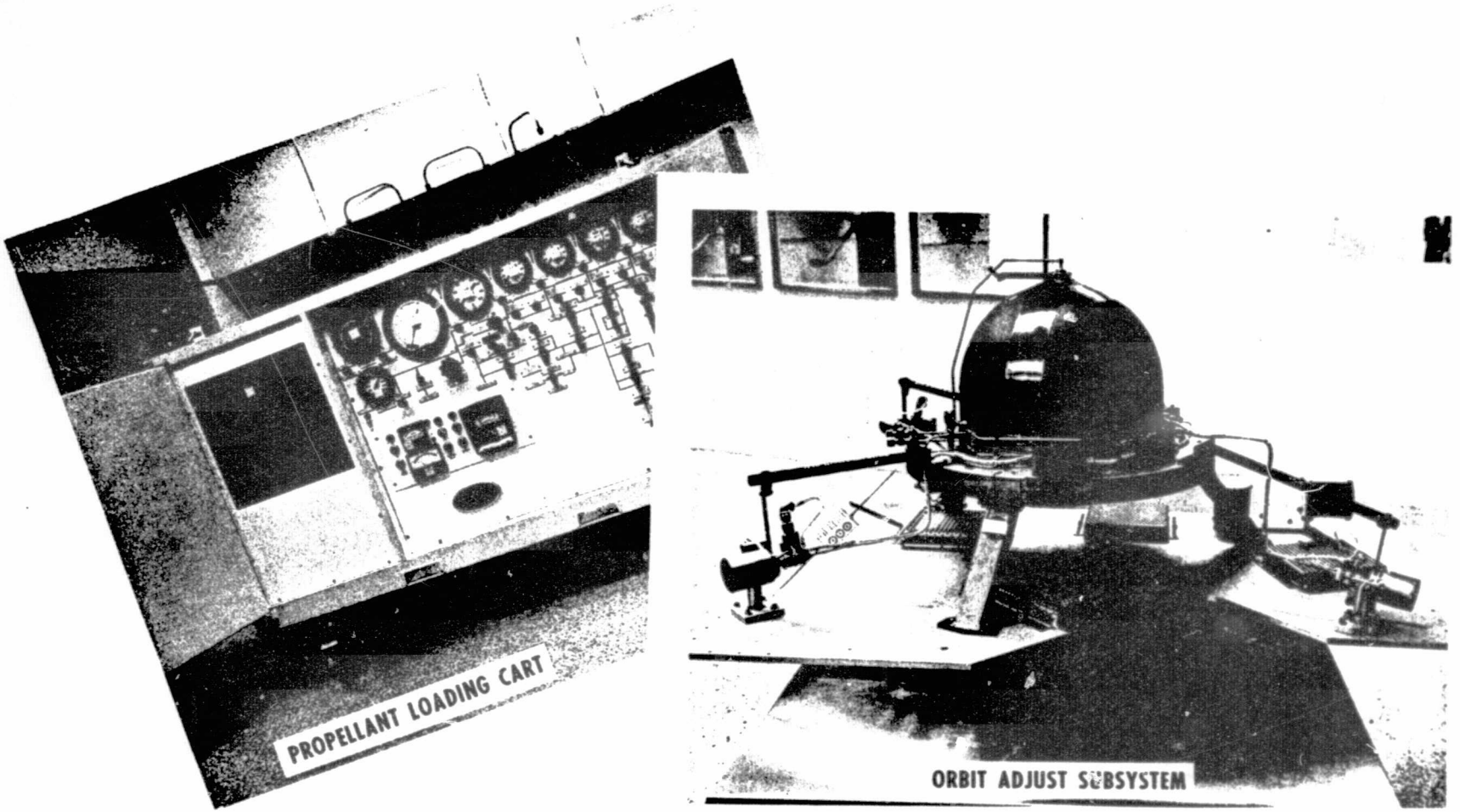

Figure 9-3. Orbit Adjust Subsystem

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semi-major axis was reduced from an initial 7283.7 kilometers to 7280.1 kilometers. In Orbits 109 and 115 a 660 second and 112 second burn, respectively, was executed using the -X thurster. This raised the semi-major axis to 7285.9 kilometers. Tracking data has confirmed satisfactory achievement of all objectives of this orbit adjust sequence. A summary of the orbit adjust maneuvers is given in Table 9-1. Performance characteristics of the +X and -X thrusters are shown in Figures 9-4 through 9-19.

Housekeeping functions of the OAS were normal. Table 9-2 gives average telemetry values for the OFF quiescent state.

Table 9-2. OAS Telemetry Values

No.	Function Name	Units	Orbits Pre-Launch	0/1	24	50
2001	Prop. Tank Temp.	°C	18.00	17.66	18.89	19.30
2003	Thrust Chamber No. 1 (-x) Temp	°C	N	-19.79	27.63	28.04
2004	Thrust Chamber No. 2 (+x) Temp	°C	N	25.59	33.64	36.31
2005	Thrust Chamber No. 3 (-y) Temp	°C	N	49.17	53.15	52.84
2006	Line Pressure	psia	528.75	529.05	532.44	487.44

N = Not Available

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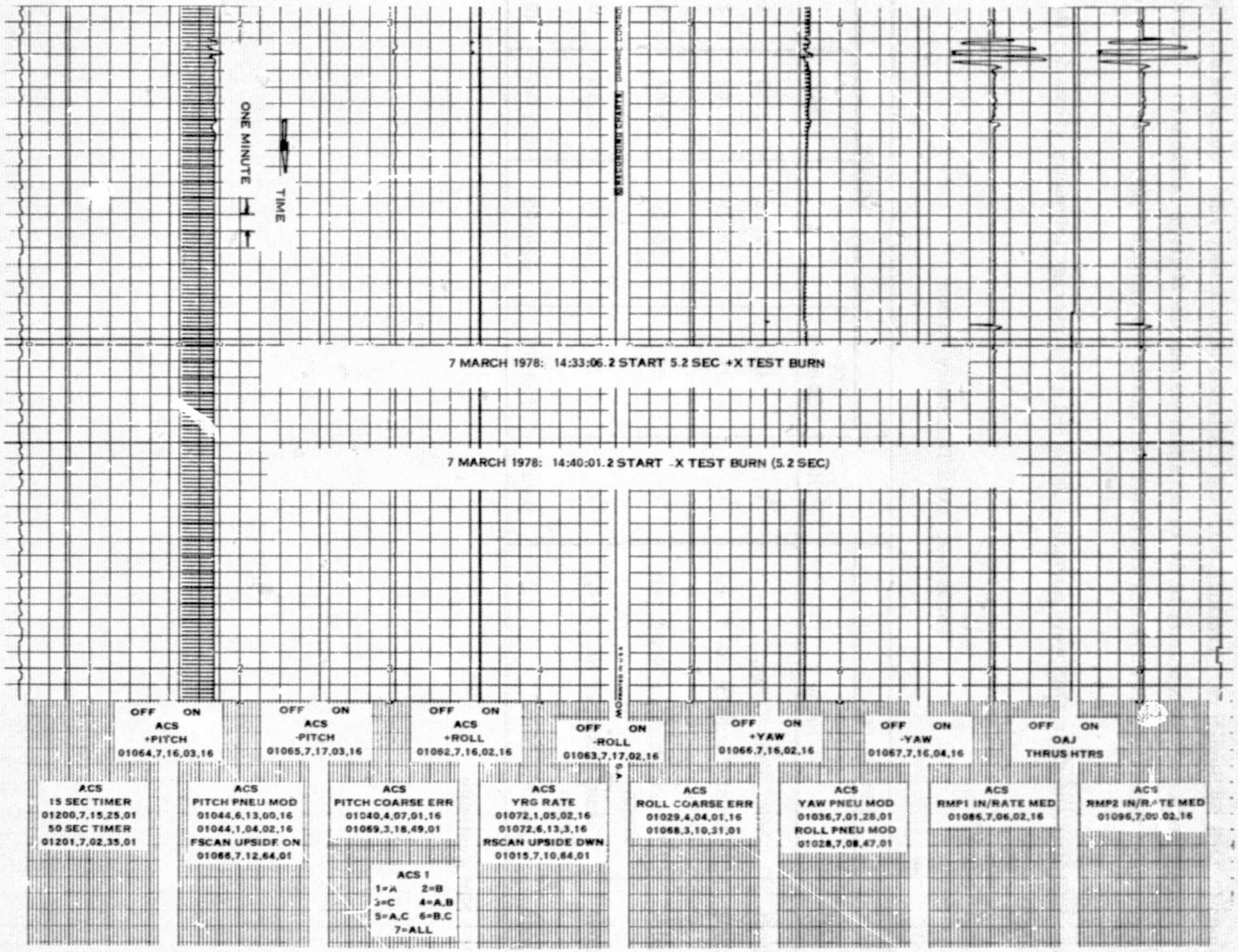

Figure 9-4. Landsat-3 Orbit Adjust Systems Performance - Orbit 26, 7 March 1978

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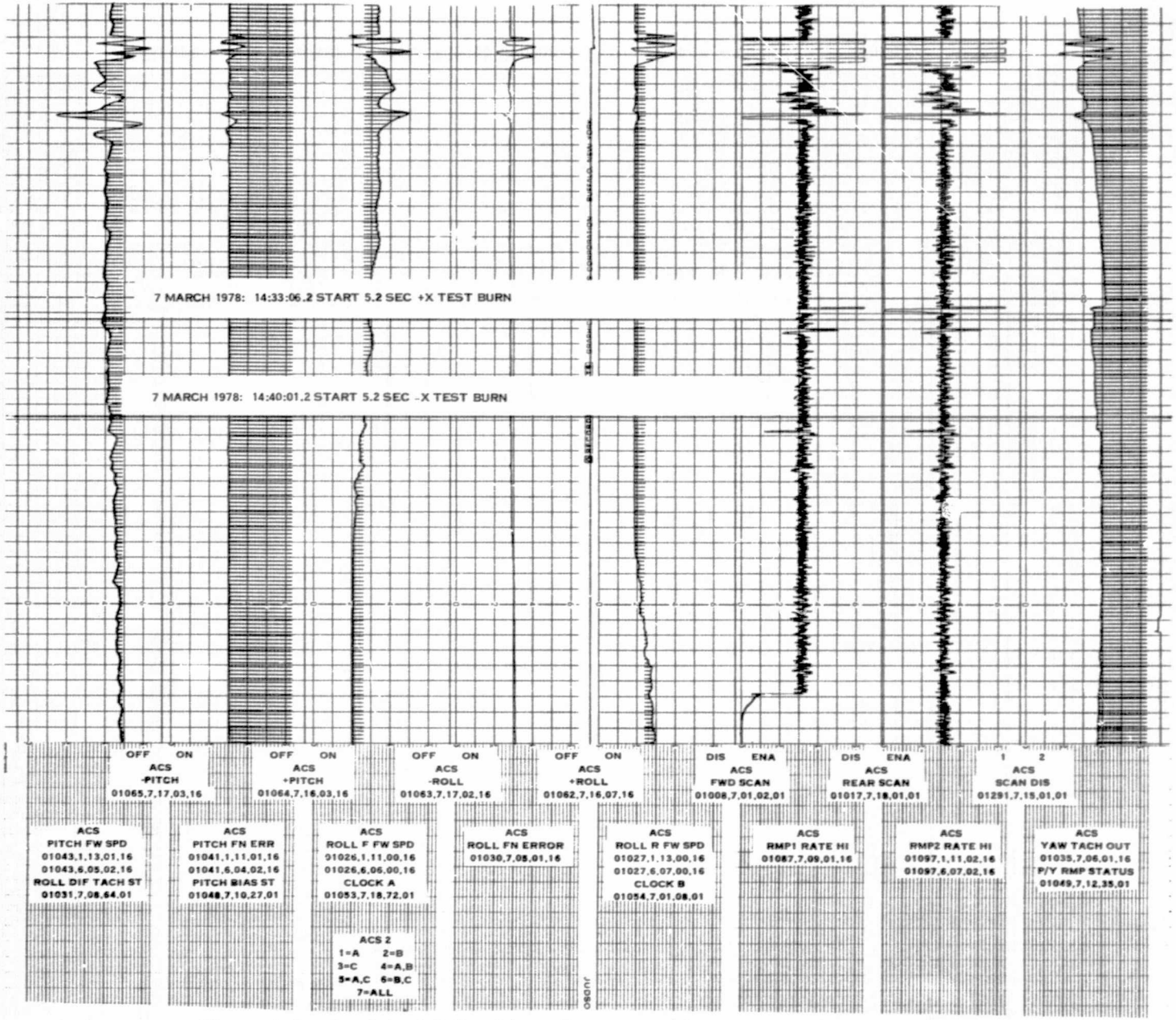

Figure 9-5. Landsat-3 Orbit Adjust Systems Performance - Orbit 26, 1978

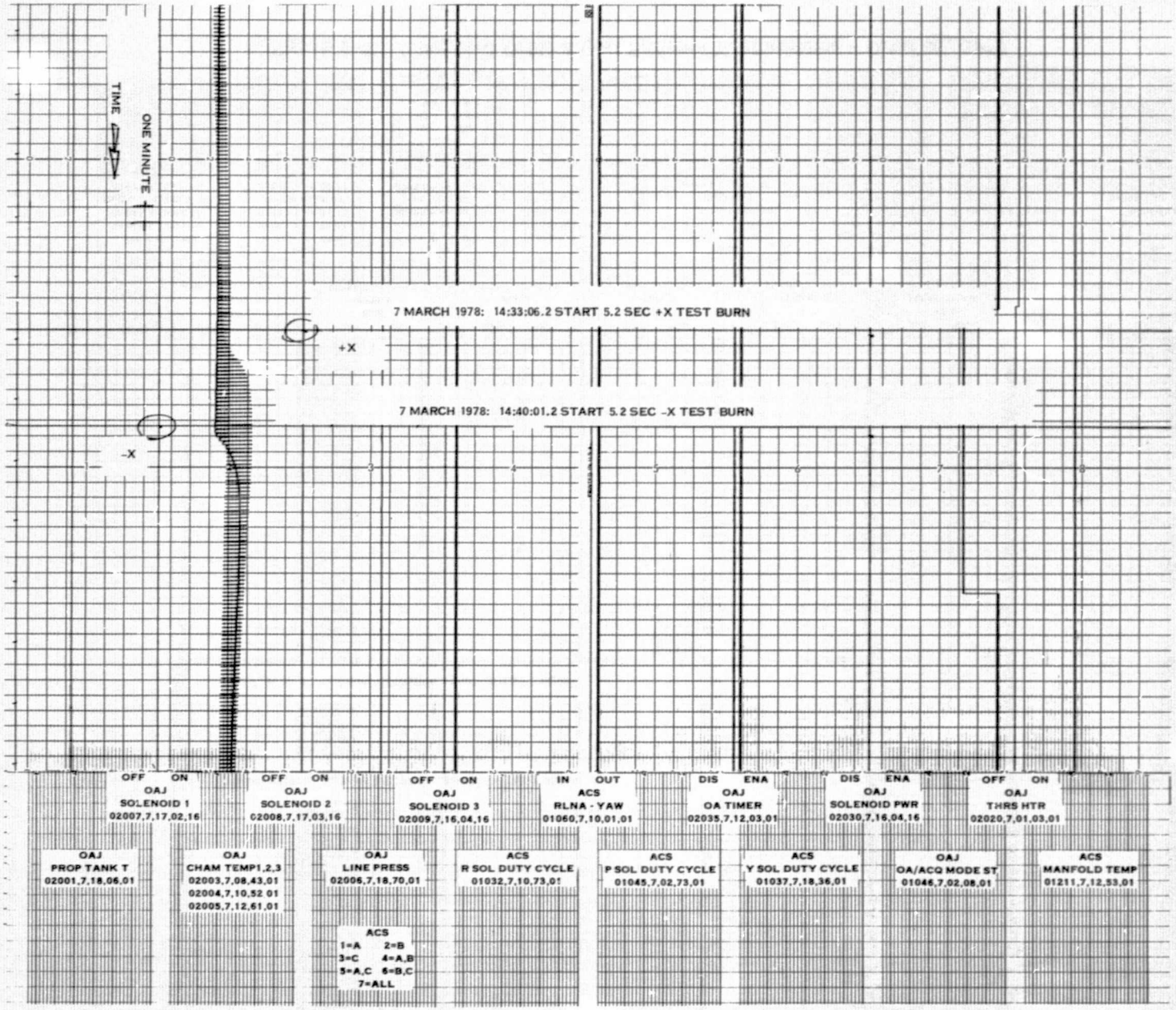

Figure 9-6. Landsat-3 Orbit Adjust Systems Performance - Orbit 26, 7 March 1978

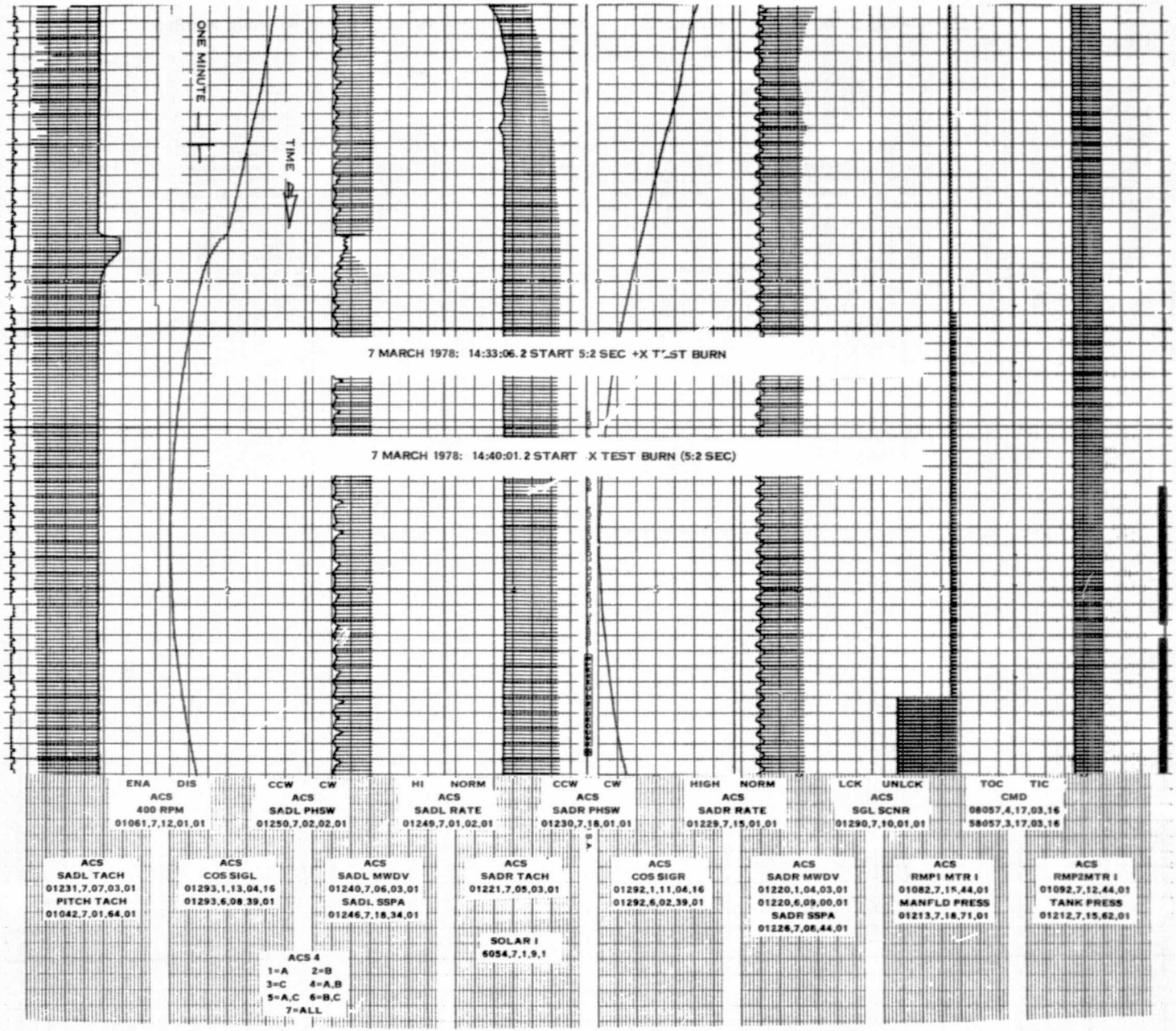

Figure 9-7. Landsat-3 Orbit Adjust Systems Performance - Orbit 26, 7 March 1978

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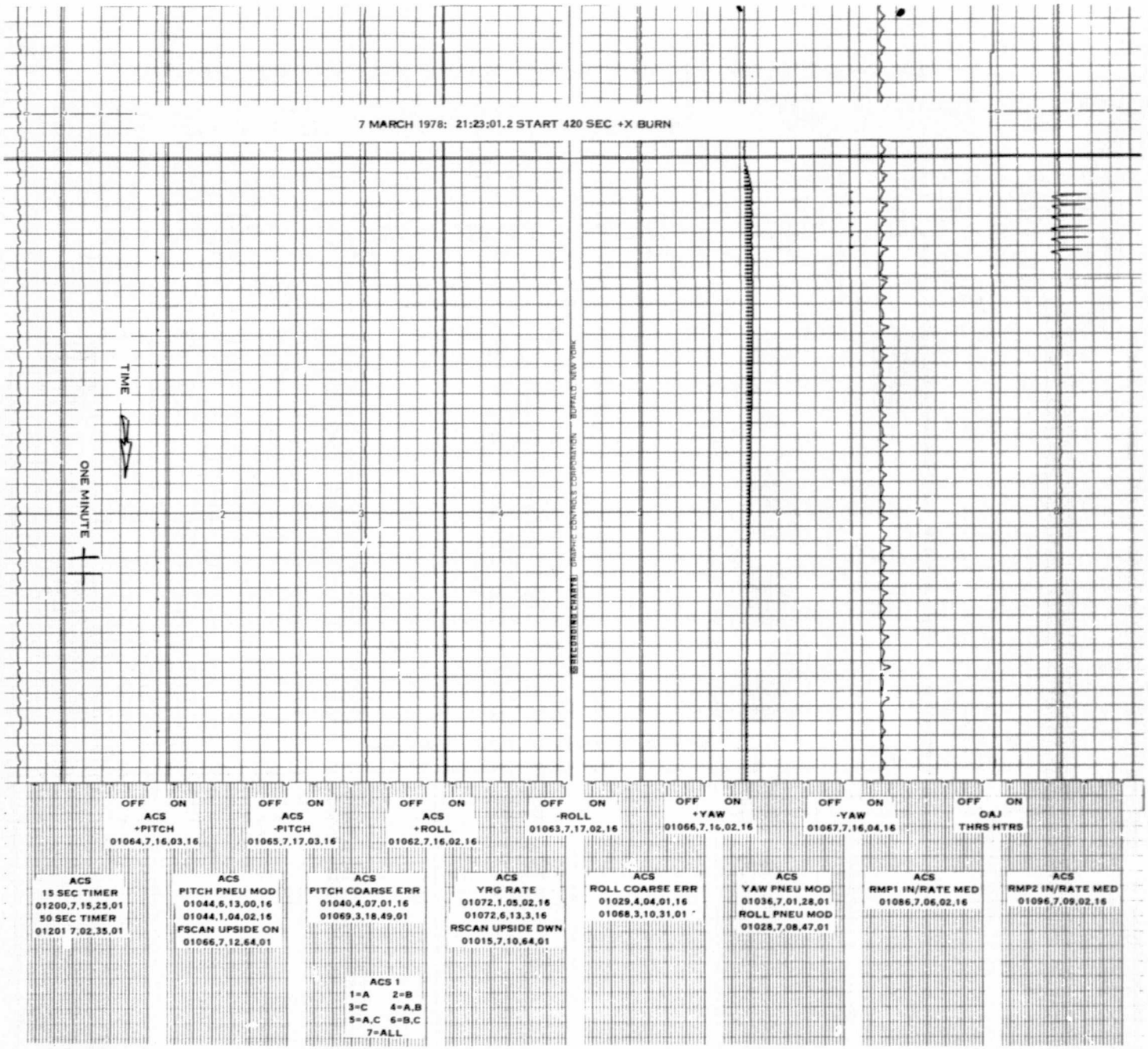

Figure 9-8. Landsat-3 Orbit Adjust Systems Performance - Orbit 30, 7 March 1978

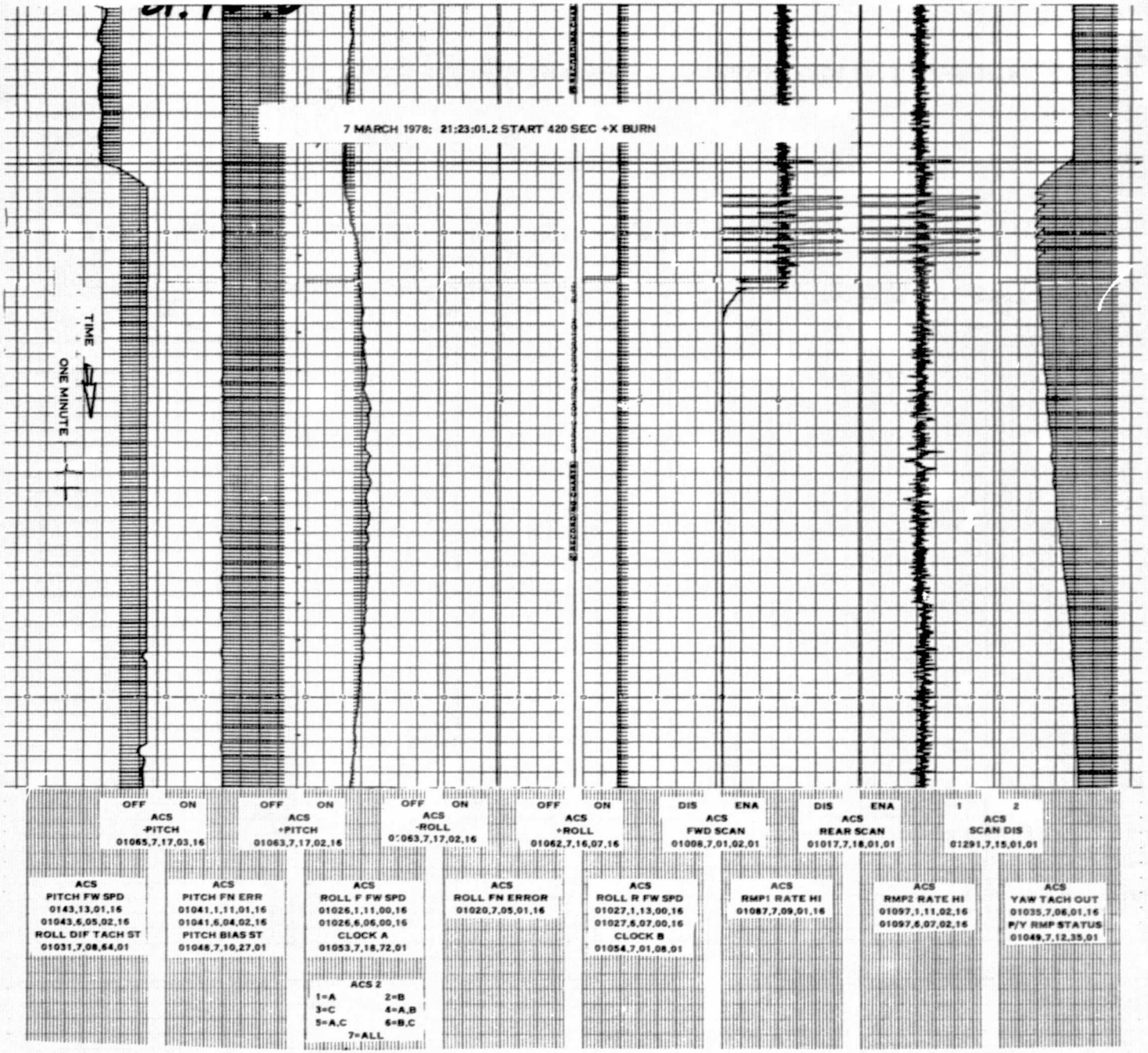

Figure 9-9. Landsat-3 Orbit Adjust Systems Performance - Orbit 30, 7 March 1978

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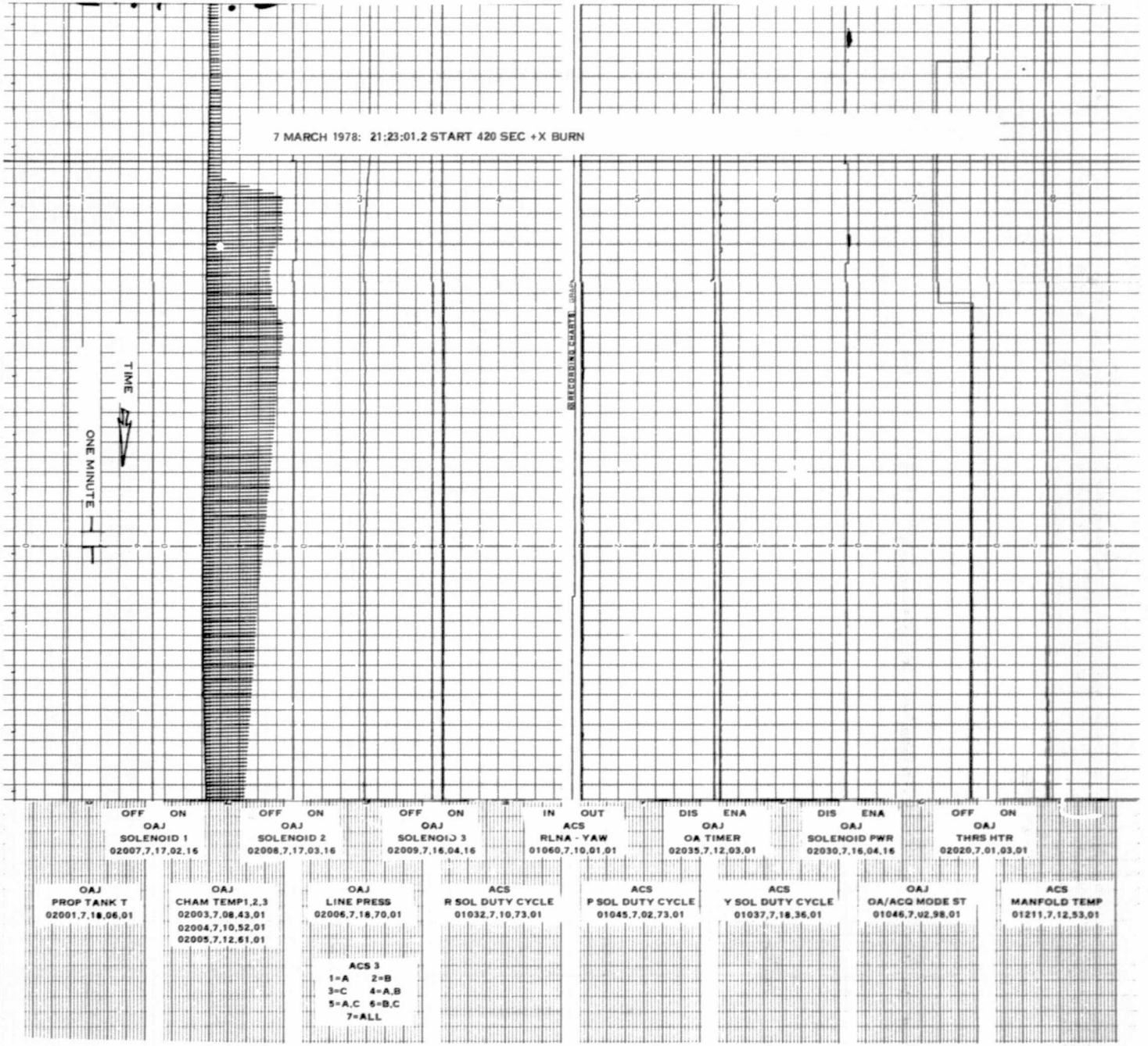

Figure 9-10. Landsat-3 Orbit Adjust Systems Performance - Orbit 30, 7 March 1978

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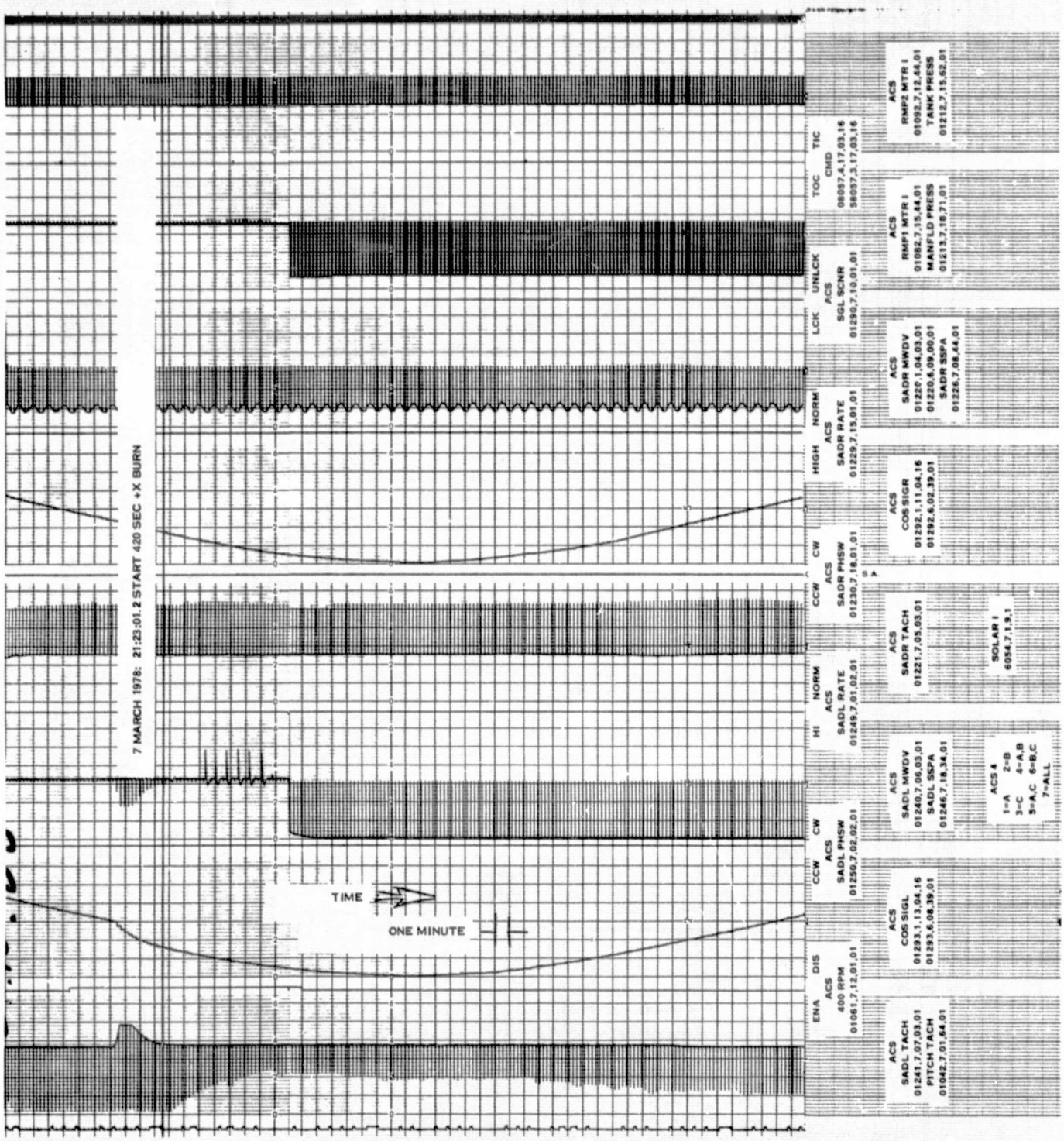

Figure 9-11. Landsat-3 Orbit Adjust Systems Performance - Orbit 30, 7 March 1978

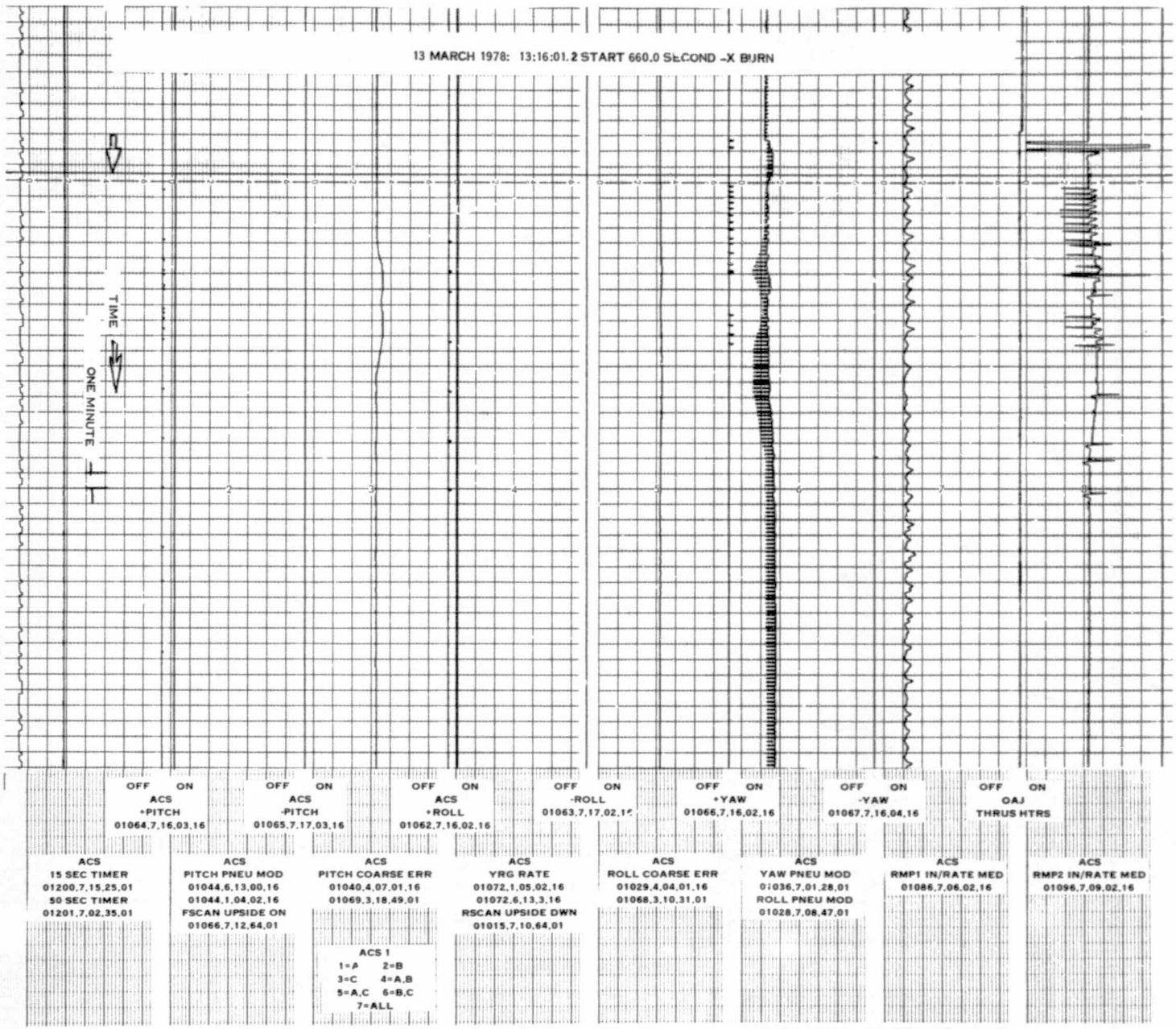

Figure 9-12. Landsat-3 Orbit Adjust Systems Performance - Orbit 109, 13 March 1978

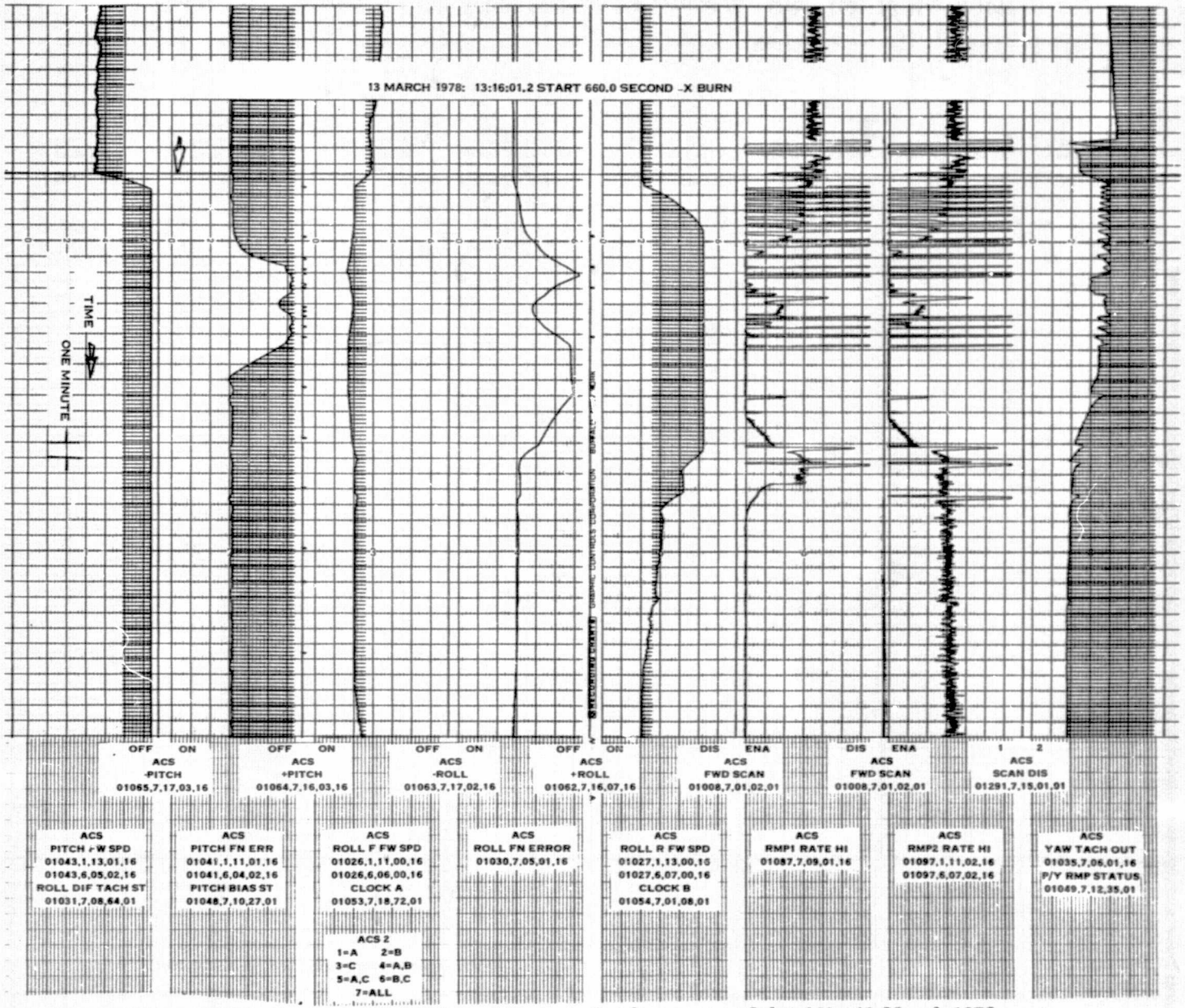

Figure 9-13. Landsat-3 Orbit Adjust Systems Performance - Orbit 109, 13 March 1978

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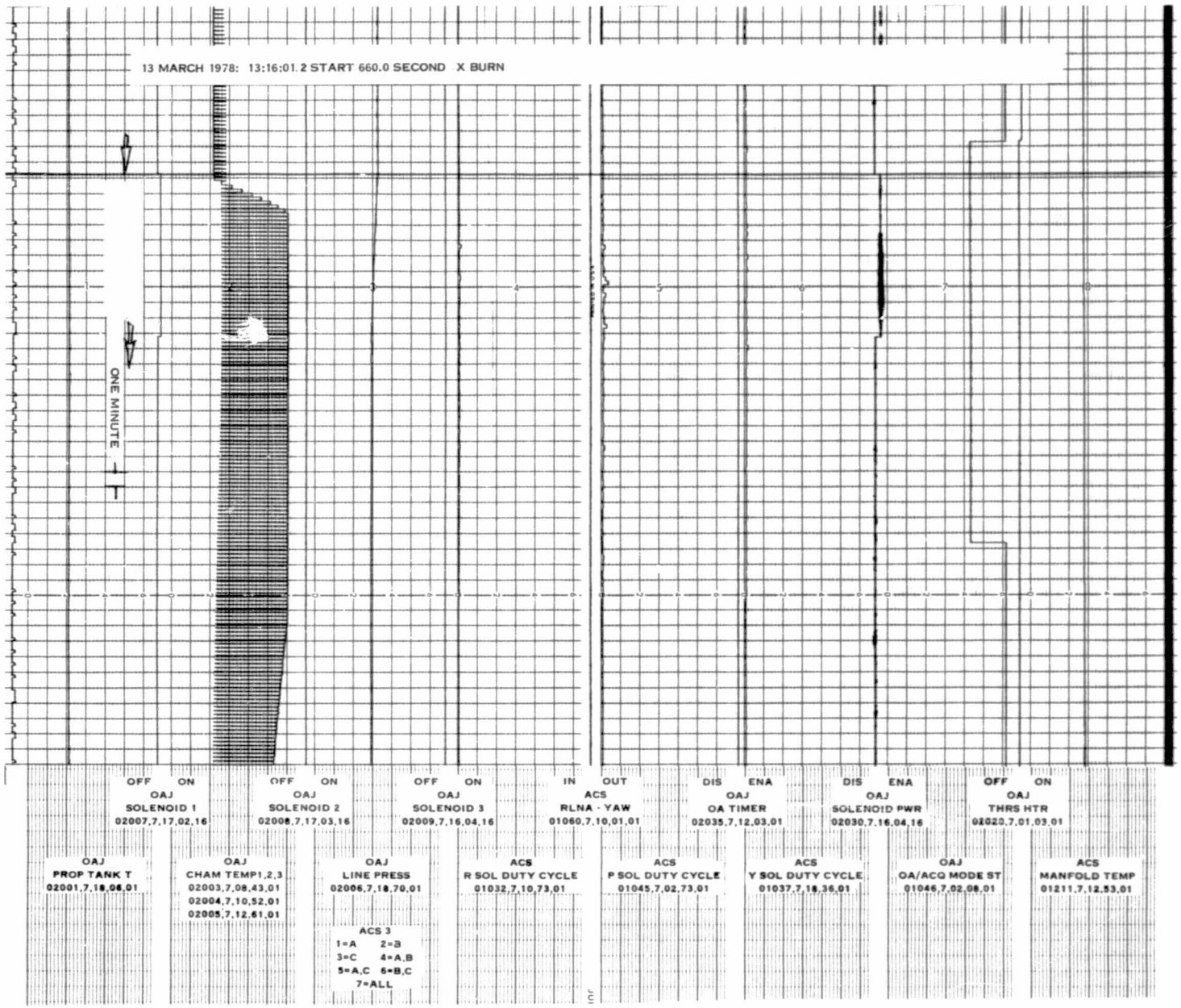

Figure 9-14. Landsat-3 Orbit Adjust Systems Performance - Orbit 109, 13 March 1978

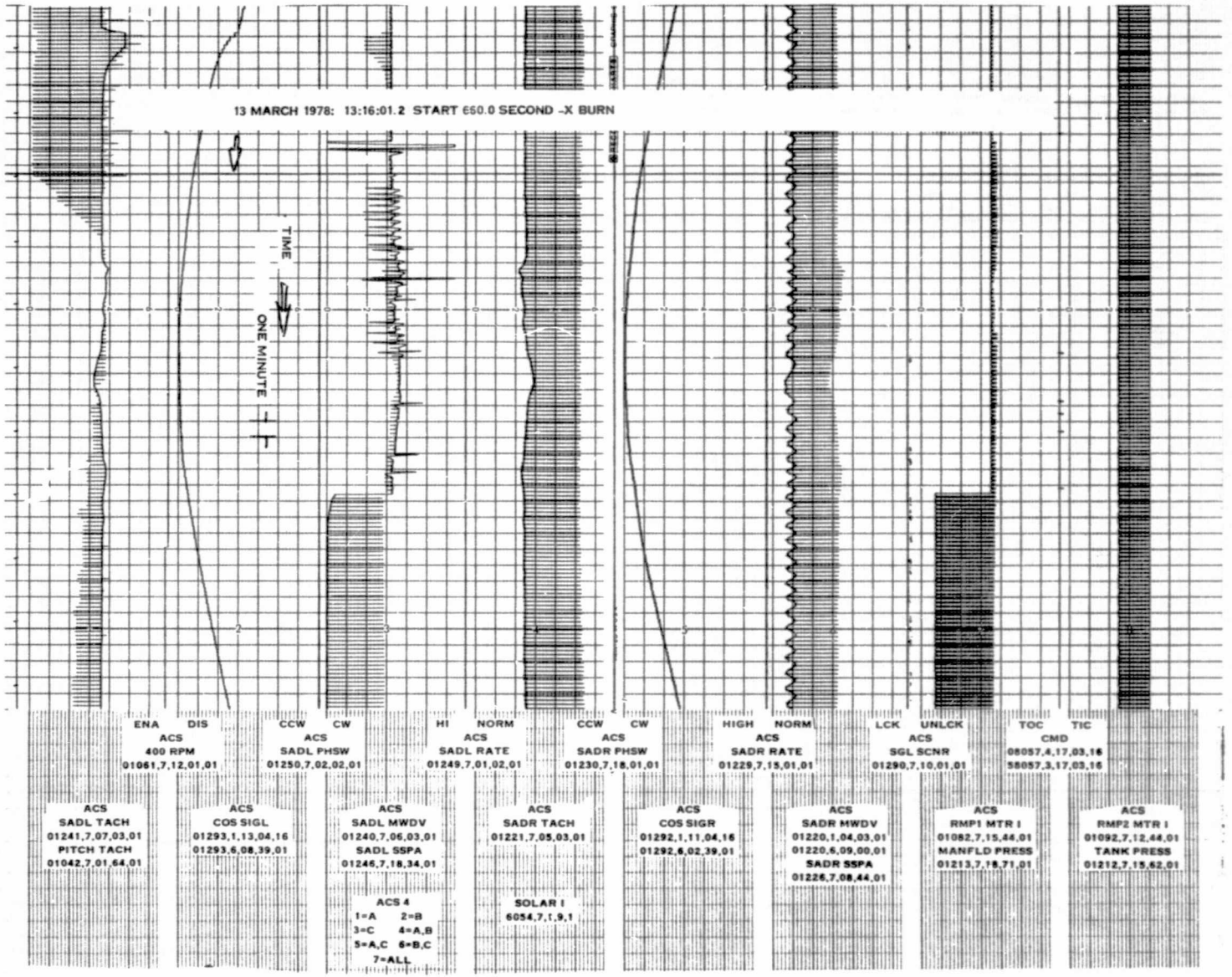

Figure 9-15. Landsat-3 Orbit Adjust Systems Performance - Orbit 109, 13 March 1978

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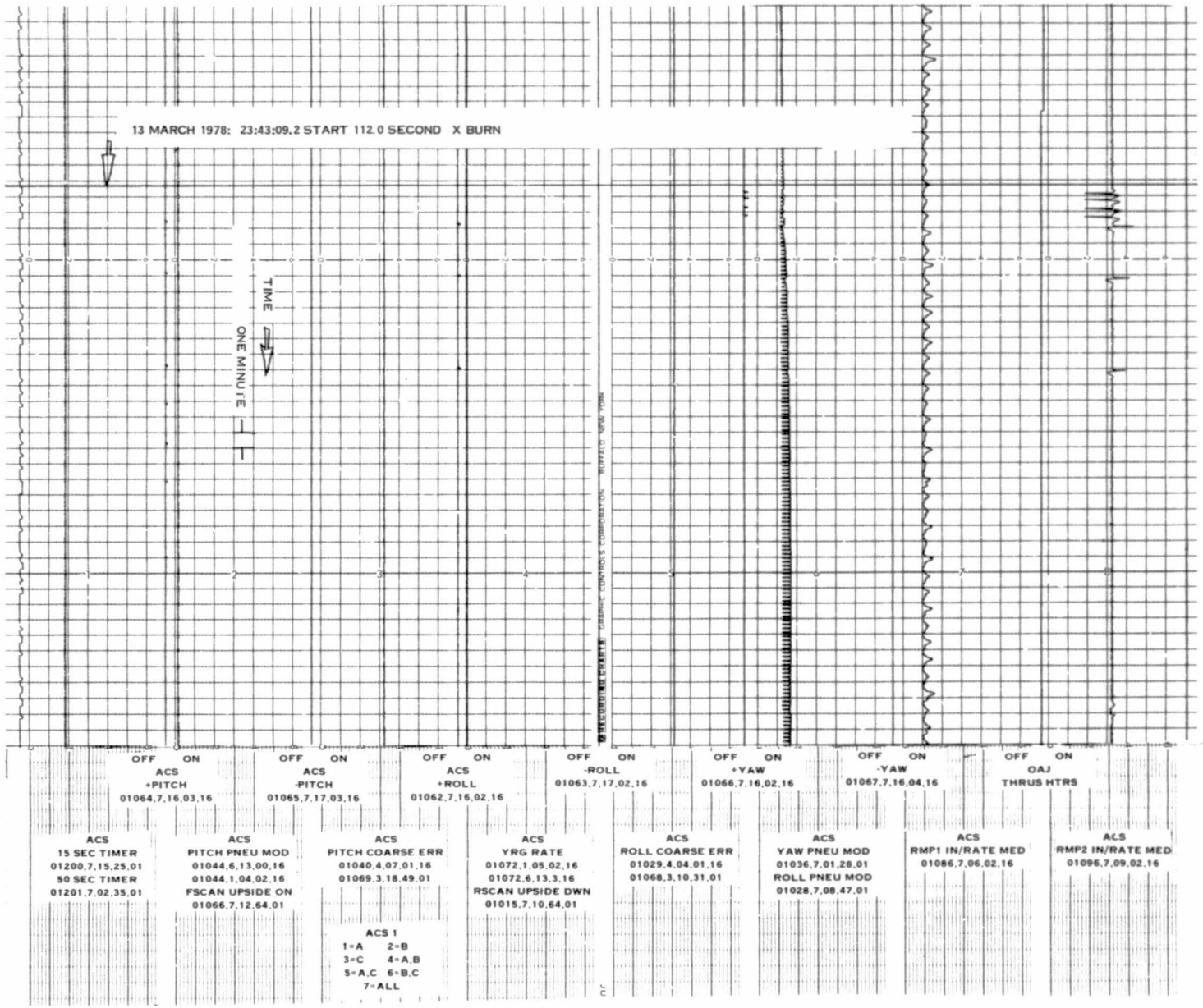

Figure 9-16. Landsat-3 Orbit Adjust Systems Performance - Orbit 115, 13 March 1978

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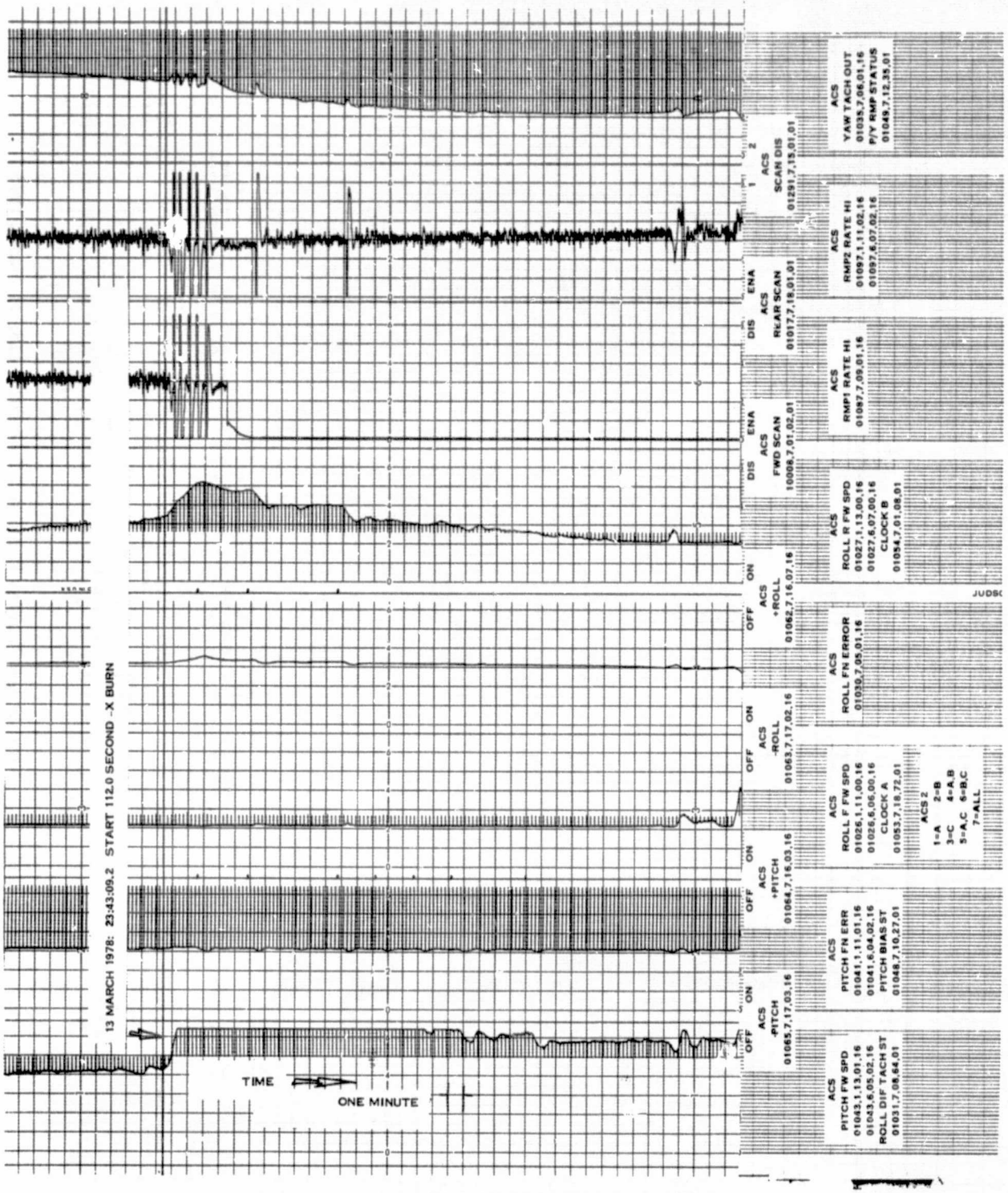

Figure 9-17. Landsat-3 Orbit Adjust Systems Performance - Orbit 115, 13 March 1978

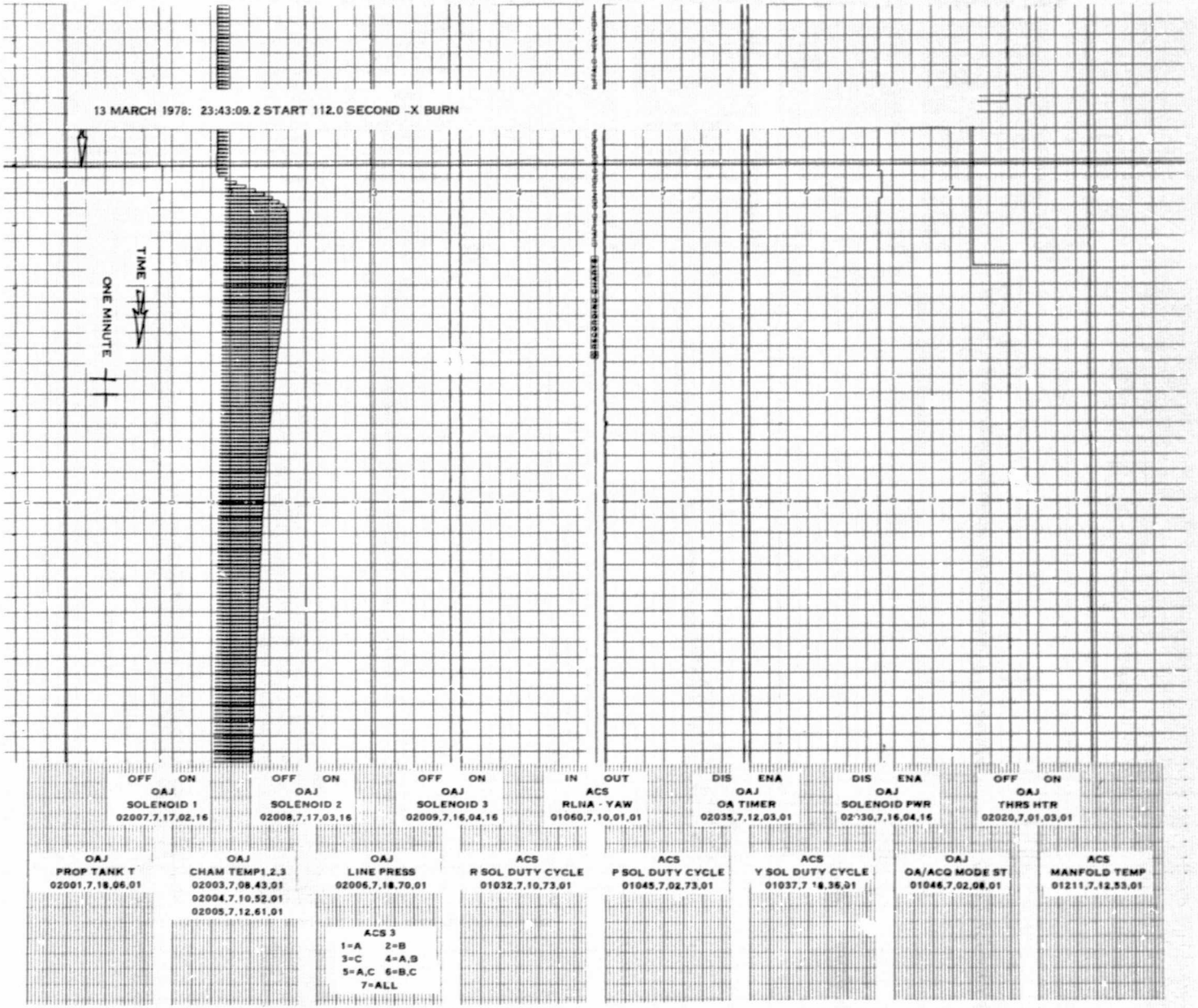

Figure 9-18. Landsat-3 Orbit Adjust Systems Performance - Orbit 115, 13 March 1978

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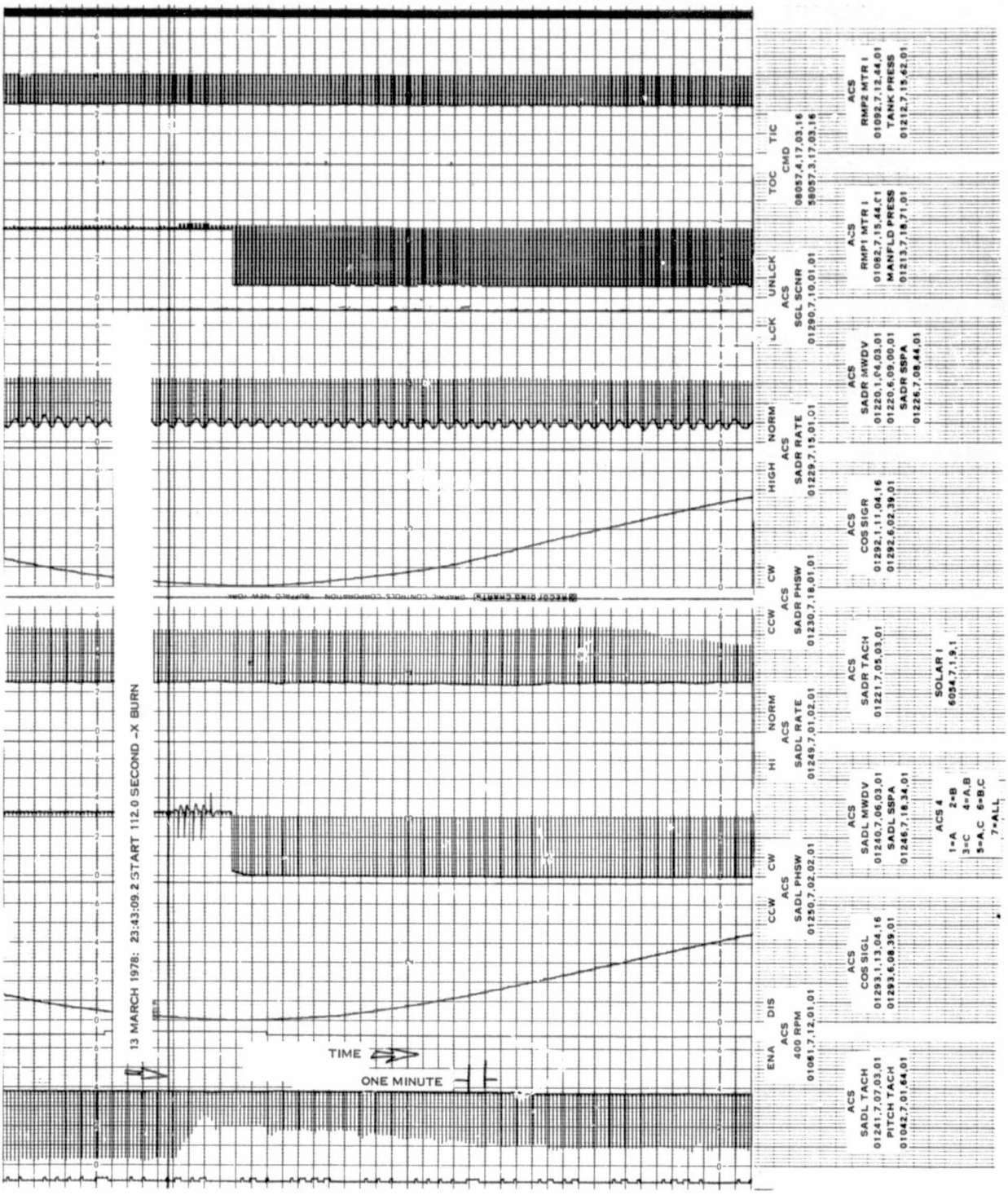

Figure 9-19. Landsat-3 Orbit Adjust Systems Performance - Orbit 115, 13 March 1978

SECTION 10

MAGNETIC MOMENT COMPENSATING

ASSEMBLY (MMCA)

The purpose of the MMCA is to provide means for generating magnetic dipole moments sufficient to cancel those residual dipole moments that may exist on the spacecraft. The MMCA consists of three mutually perpendicular, chargeable, permanent magnetic rods. Activation of the charging and discharging mechanism is by commands. See Figure 10-1 for functional block diagram.

The MMCA was launched in the OFF mode as noted in Table 10-1.

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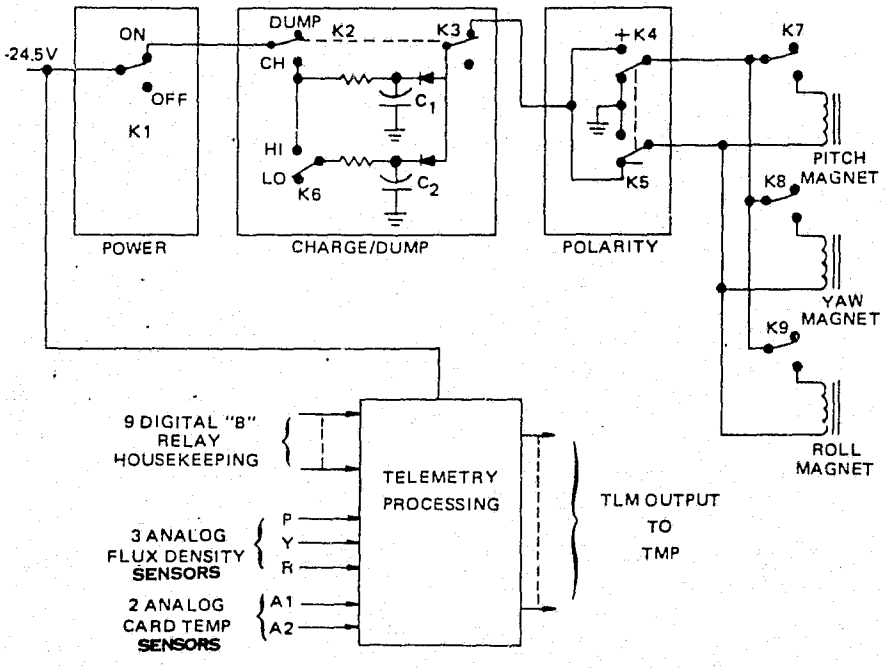

Figure 10-1. MMCA Functional Block Diagram

Table 10-1. MMCA Launch Mode

	Mode	CMD
Power	OFF	765
Capacitor	HI	744
Capacitor	DUMP	706
Polarity	+	742
Pitch Coil	OUT	702
Roll Coil	OUT	761
Yaw Coil	OUT	704

Housekeeping telemetry, Flux Density Sensors, and Temperature Sensors of the MMCA were normal. The unit was not activated; insertion of dipole values was deferred pending evaluation of the ACS performance. Table 10-2 gives average telemetry values.

Table 10-2. MMCA Telemetry Values

Number	Name	Units	ORBIT		
			T/V 20°	0/1	50
4001	A1 Board Temp	DGC	20.2	19.64	17.98
4002	A2 Board Temp	DGC	22.8	22.3	20.78
4003	Hall Current	TMV	3.65	3.65	3.64
4004	Yaw Flux Density	TMV	3.20	3.25	3.22
4005	Pitch Flux Density	TMV	3.20	3.20	3.20
4006	Roll Flux Density	TMV	3.20	3.15	3.13

SECTION 11

UNIFIED S-BAND/PREMODULATION PROCESSOR (USB/PMP)

The Unified S-Band Equipment (USBE) consists of two S-Band transmitter/receiver pairs (transponders). Each transmitter/receiver pair normally operates as a separate unit. Only one of the two is powered at any given time, but it is possible to cross-strap them by ground command. When cross-strapped, the receiver of one transponder and the transmitter of the other are powered. The USB Receiver receives the uplink RF signal, demodulates the command and ranging subcarriers, and, when possible, provides a phase-locked oscillator signal for the down-link USB transmitter. A ranging (pseudo-random noise-PRN) signal is demodulated and is available for modulation of the downlink upon ground command. The subcarrier containing command information is sent to the PMP. One of the USB receivers is powered at all times. The USB transmitter uses either the phase-locked oscillator of the USB receiver or, if sufficient signal for phase-lock is not present, an auxiliary oscillator for the transmitter RF driver. Back-up modes allow and sometimes require use of the auxiliary oscillator or the receiver oscillator (phase-locked or free-running) at all times. Modulation of the USB transmitter comes from the PMP, and may or may not have the PRN ranging signal added. Switching permits either transmitter to be ON or OFF, but both transmitters ON simultaneously is not possible. Protection against inadvertent leaving ON of either transmitter (and of the wideband power amplifiers) is porovided by a 32-minute cutoff timer. See Figure 11-1 for Functional Block diagram. Figures 11-2 and 11-3 are modulation formats.

Prelaunch Characteristics are given in Table 11-1.

The USBE Transmitter was launched in the OFF mode, as noted in Table 11-2, and activated after separation in Orbit 1 in the Winkfield Pass. Commands were successfully uplinked in orbit 1 at Madrid and have continued to be normal since that time. Table 11-3 gives average telemetry flight and prelaunch measured data.

At launch, the operational mode was MSFN-B/STADAN-A which employs USB-B section for both receiver and transmitter.

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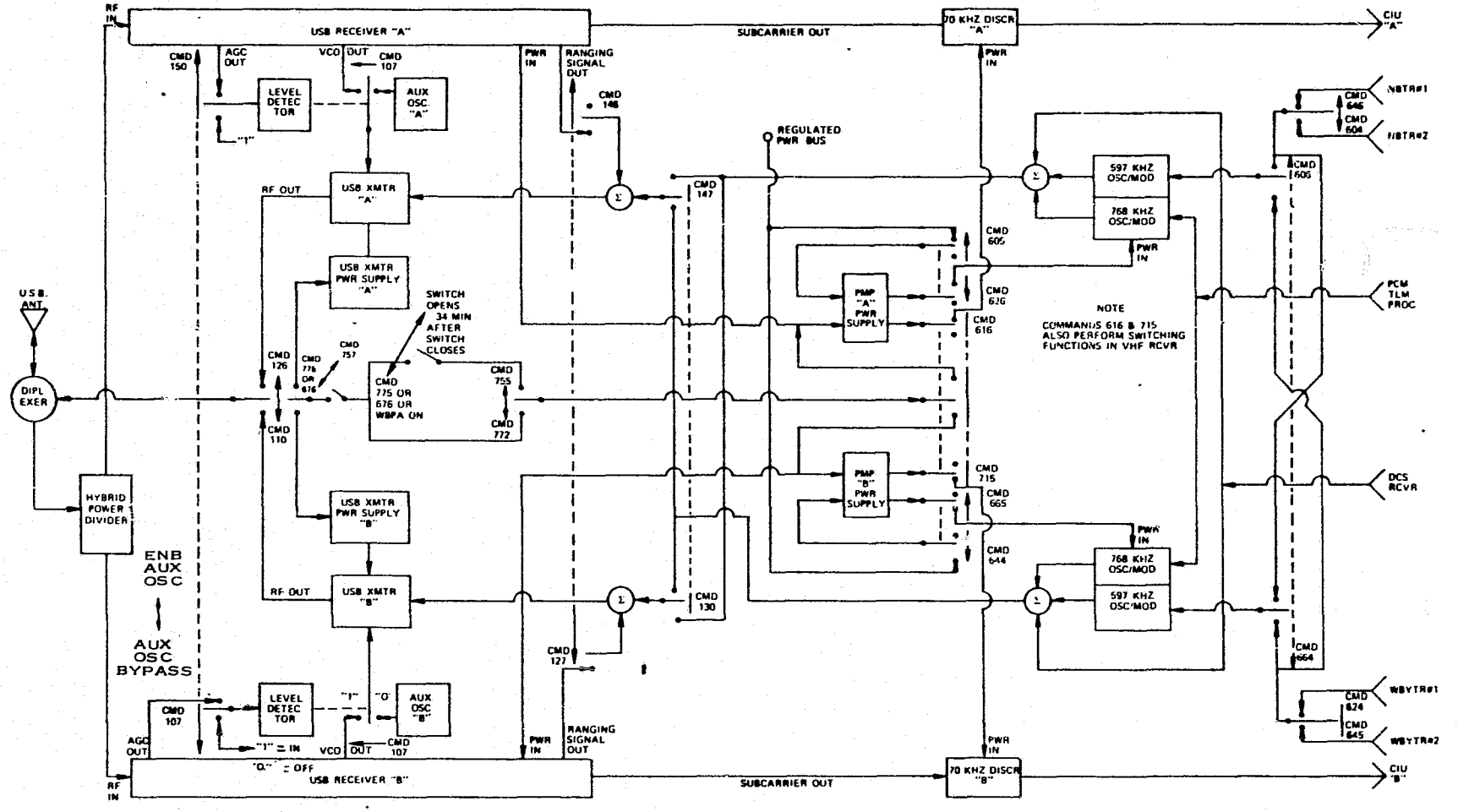

Figure 11-1. USBE/PMP Functional Block Diagram

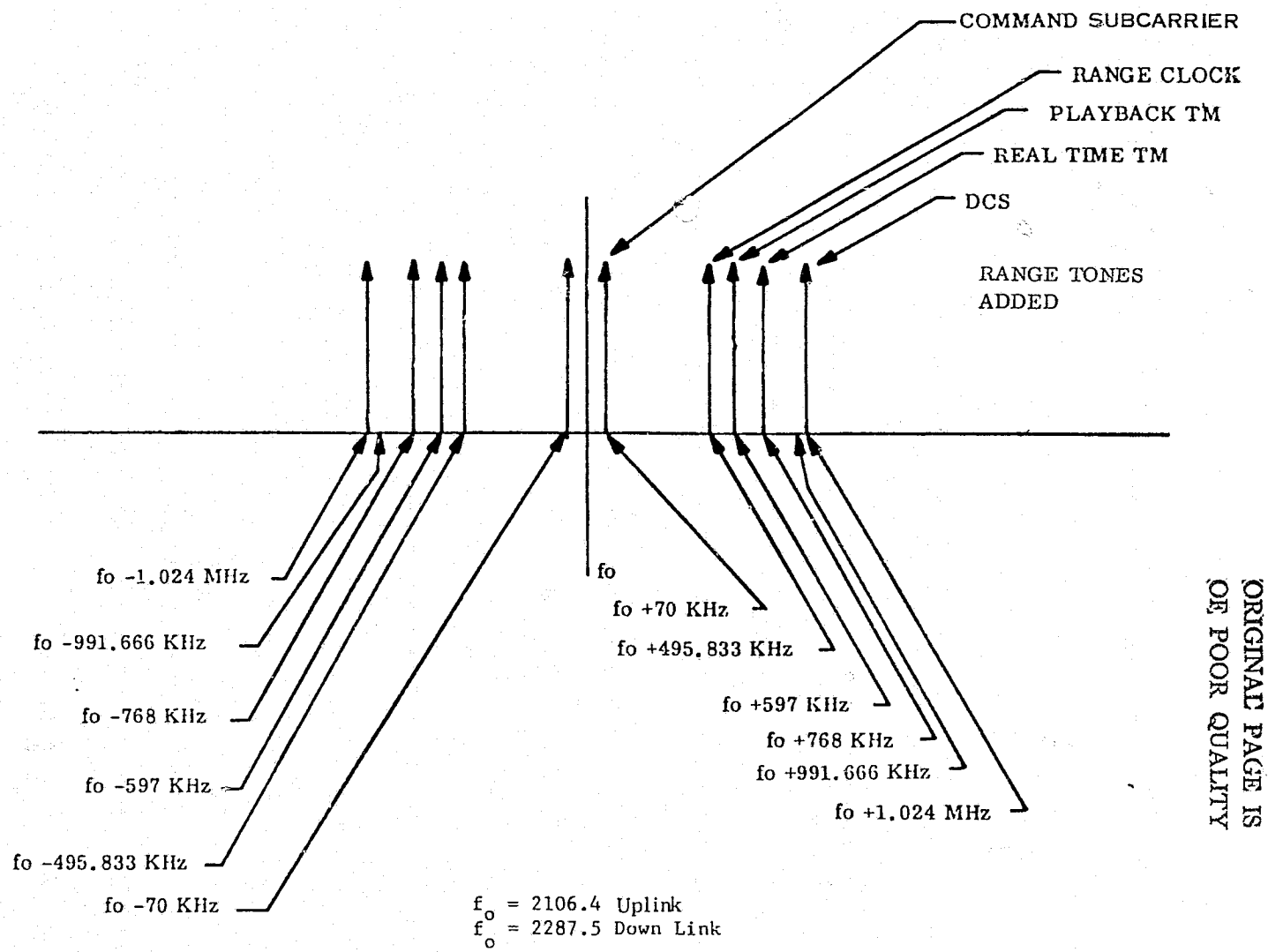

Figure 11-2. S-Band Transmission Spectrum

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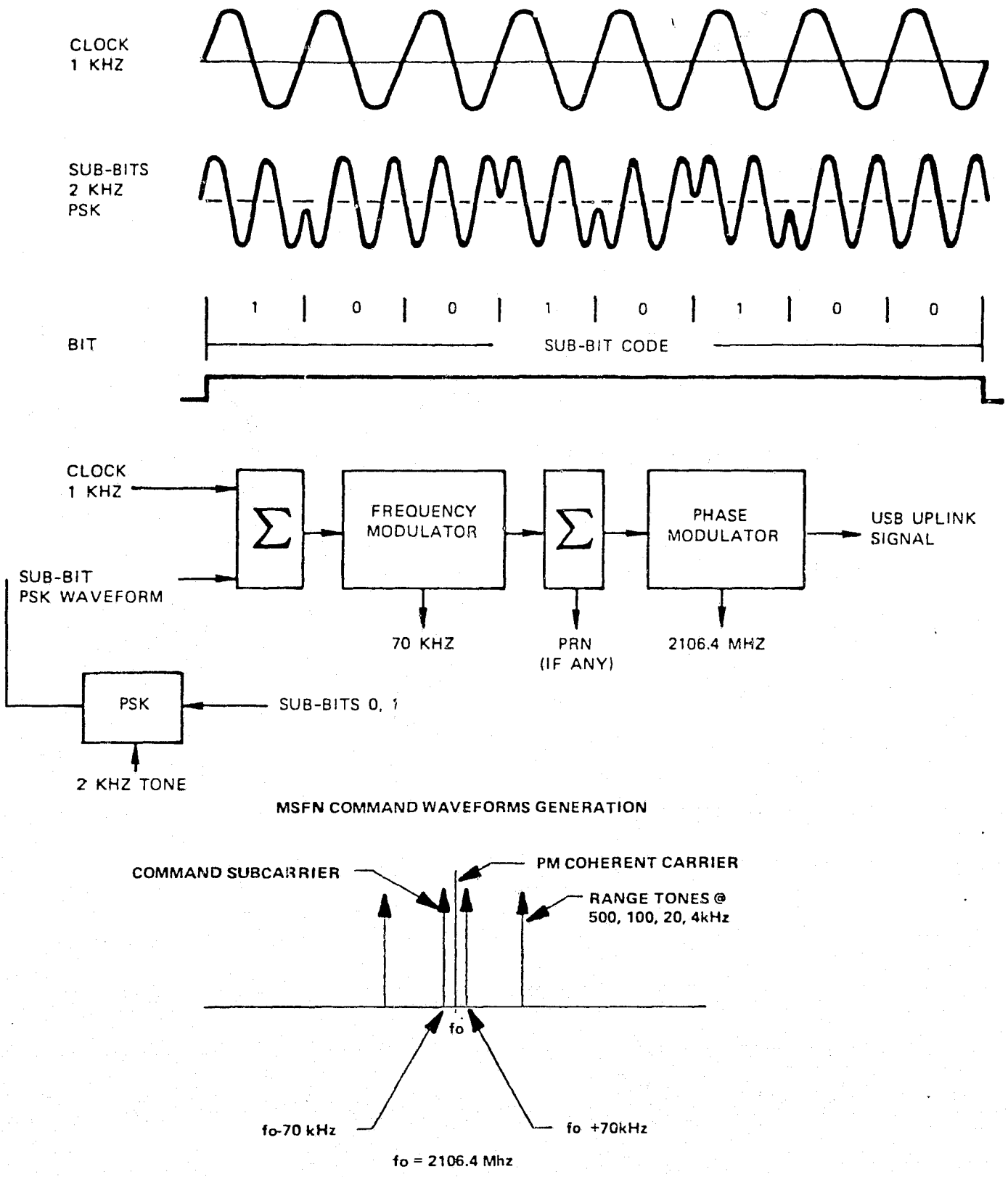

Figure 11-3. MSFN/USB Uplink Modulation for Landsat-3

Table 11-1. Unified S-Band Subsystem

Components		Pre-Launch Oper. Time
USB	FT-1	2882 HR
PMP	QM-1	735 HR

Pre-Launch Performance

		Measured	
		A	B
XMTR RF power output	1W	0.924W	0.895W
RCVR CMD threshold	-95 DBM	-101 DBM	-102 DBM
Range delay variation	40 NSEC P-P	5 NSEC P-P	5 NSEC P-P

Pre-Launch Problem Summary

TXB -45 dB Spur; Disappeared in T/V Test; Waiver

Table 11-2. USB/PMP Launch Mode

USB Transmitter	Mode	CMD	
USB XMTR PWR	EN	347	FN 11022 - EN USB TRANSMITTER OFF
USB XMTR	DIS	757	TRANSMITTER POWER OFF
AUX OSC	EN	150	AUX OSC EN
SEL XMTR	A	126	TRANSMITTER A ON
RANGING	OFF	146	RANGING OFF
MOD INPUT	NORM	147	MOD INPUT NORMAL
PMP Subsystem			
MOD A	OFF	626	MODE OFF
MOD B	OFF	665	MODE OFF
SEL	NBR	606	
NBTR SEL	1	646	RCDR MODE NBR 1
WBVTR SEL	1	624	RCDR MODE NBR 1

Table 11-3. Landsat-3 USB/PMP Telemetry Values

No.	Function Name	Units	T/V 20°	Orbits		
				9	21	50
11001	USB Rcvr AGC	DBM	*	-132.00	-66	-101.62
11002	USB Xmtr Pwr (B)	WTS	1.63	1.65	1.62	1.65
11003	USB Rcvr Error	KHz	*	3.58	2.56	1.81
11004	USB Xpond Temp	DGC	22.1	25.00	24.84	24.63
11005	USB Xpond Press	PSI	16.94	17.00	17.00	17.00
11007	USB Xmtr A-15V	VDC	2.45	F	F	F
11008	USB Xmtr B-15V	VDC	2.36	2.35	2.36	2.35
11009	USB Range -15V	VDC	2.08	2.05	2.05	2.05
11101	PMP Pwr A Volt	VDC	-14.82	F	F	F
11102	PMP Pwr B Volt	VDC	-14.70	-14.76	-14.70	-14.70
11103	PMP Temp A	DGC	23.50	28.06	21.57	21.48
11104	PMP Temp B	DGC	23.10	24.39	26.03	25.96

F = Unit OFF
* = Not Applicable

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SECTION 12

SEPARATION AND UNFOLD SUBSYSTEM (MECH)

The Separation and Unfold Subsystem consists of the following components: Unfold Timer, Unfold Switch, Separation Switches, Unfold Motors, and Cable Cutter Assembly. At programmed separation time, the launch vehicle provides power to fire four electro-explosive bolt cutters to effect spacecraft separation. See Figures 12-1 and 12-2 for mechanical arrangement, and Figure 12-3 for Functional Block Diagram.

The separation subsystem performed as expected. The 2.5 second timer squibs caused paddle unfold. Before separation the subsystem properly restrained the paddles, disabled the primary and redundant matrix A drivers, provided -24.5 VDC to the attitude control reset line, and provided telemetry signals indicating that the spacecraft was still mated to the Delta Vehicle. After separation all circuits were activated and separation was confirmed by referring to the strip chart ACS telemetry functions listed below:

Function No.	Title	Delta Activation Time From Separation (ΔSeconds)
1240	SAD left MTR WNDG voltage	52.5
1027	Roll rear flywheel speed	17.5
1035	Yaw tach output	17.5
1040	Pitch coarse error	17.5
1043	Pitch flywheel speed	17.5

All of these functions have known activation delta times from separation, and all are read each second in the telemetry matrix.

By measuring the delta times backwards, i.e., from activation to separation, all of the functions indeed commence from the same baseline in time, and hence confirm the separation time.

Table 12-1 shows prelaunch measurements of the unfold system and are included for reference.

Table 12-1. Unfold Subsystem

Performance	Spec	Pre-Launch Measurements
Unfold Timer Fire Time 1	2.7 ± 0.6 Sec	2.67 Sec
Unfold Timer Fire Time 2	5.3 ± 1.2 Sec	5.25 Sec
Squib Fire Current 1	≥ 4 Amp Ea.	7 Amp Ea.
Squib Fire Current 2	≥ 4 Amp Ea.	7 Amp Ea.
Paddle Open Time (-Y)	≤ 40 Sec	~ 28 Sec
(+Y)	≤ 25 Sec	~ 20 Sec
Pre-Launch Problem Summary		
No Problems Throughout Environmental Test Program		

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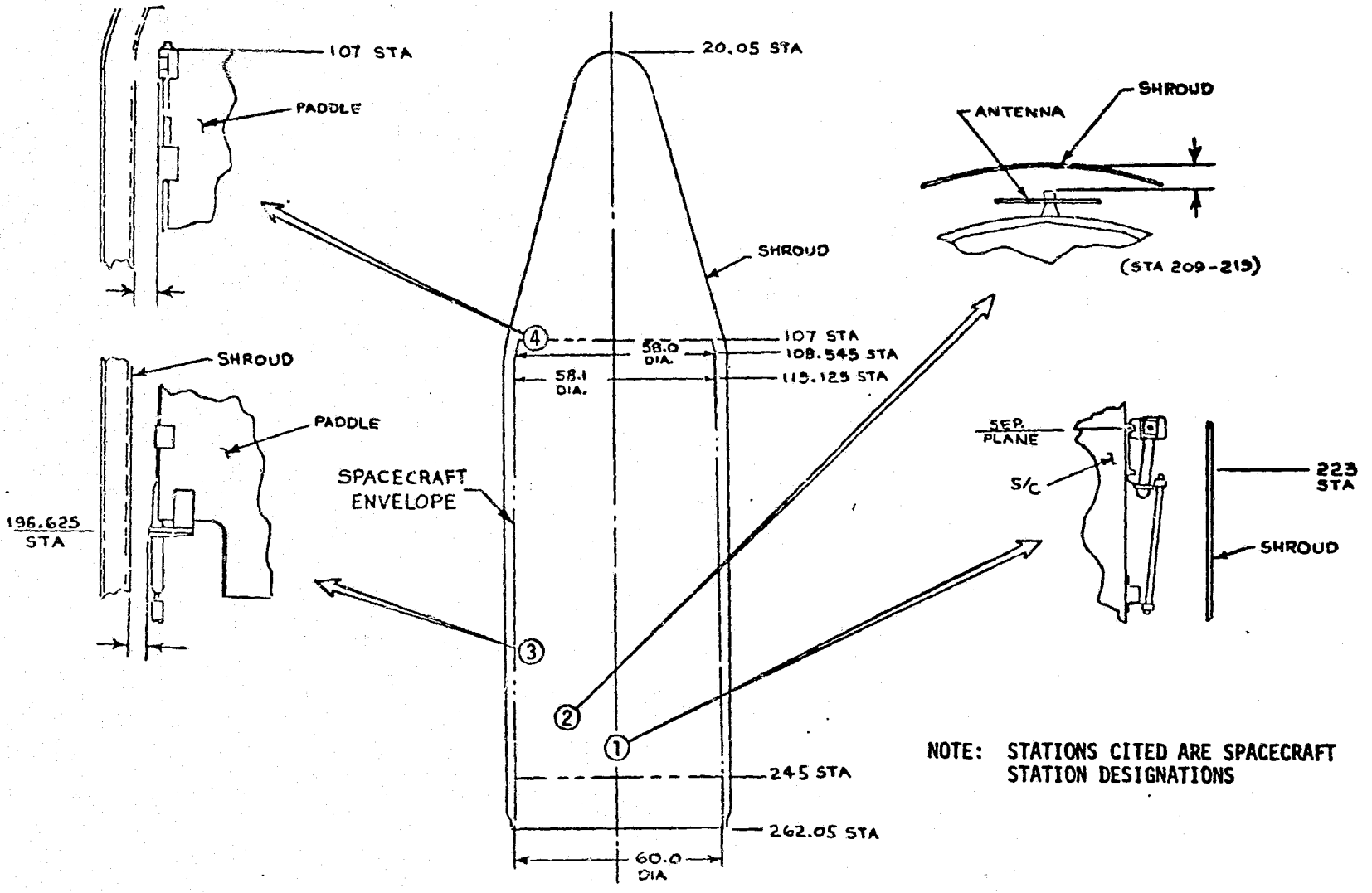

Figure 12-1. Landsat-3 Observatory/Shroud Envelope and Minimum Clearances

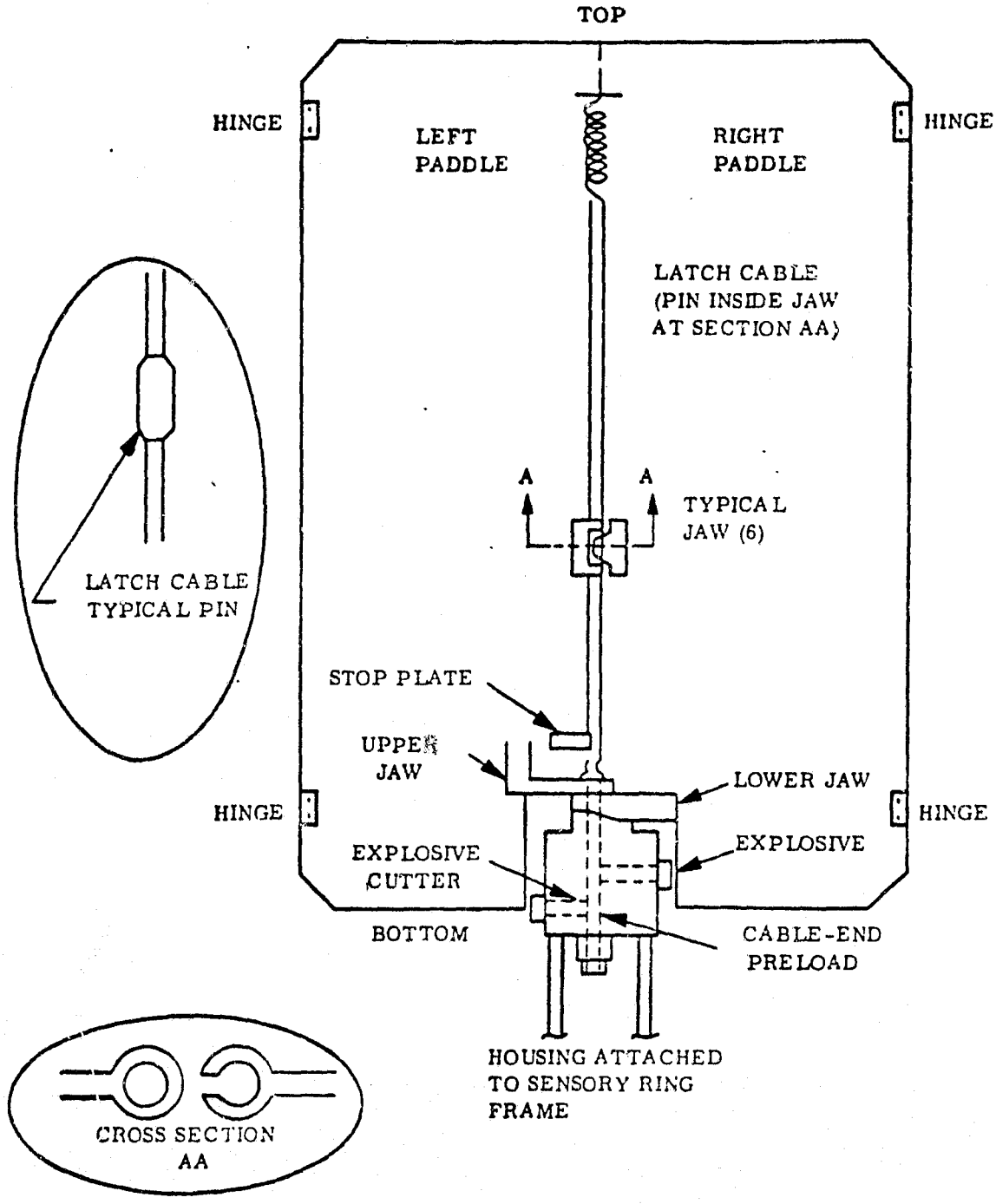

Figure 12-2. Separation and Unfold Subsystem Mechanical Details

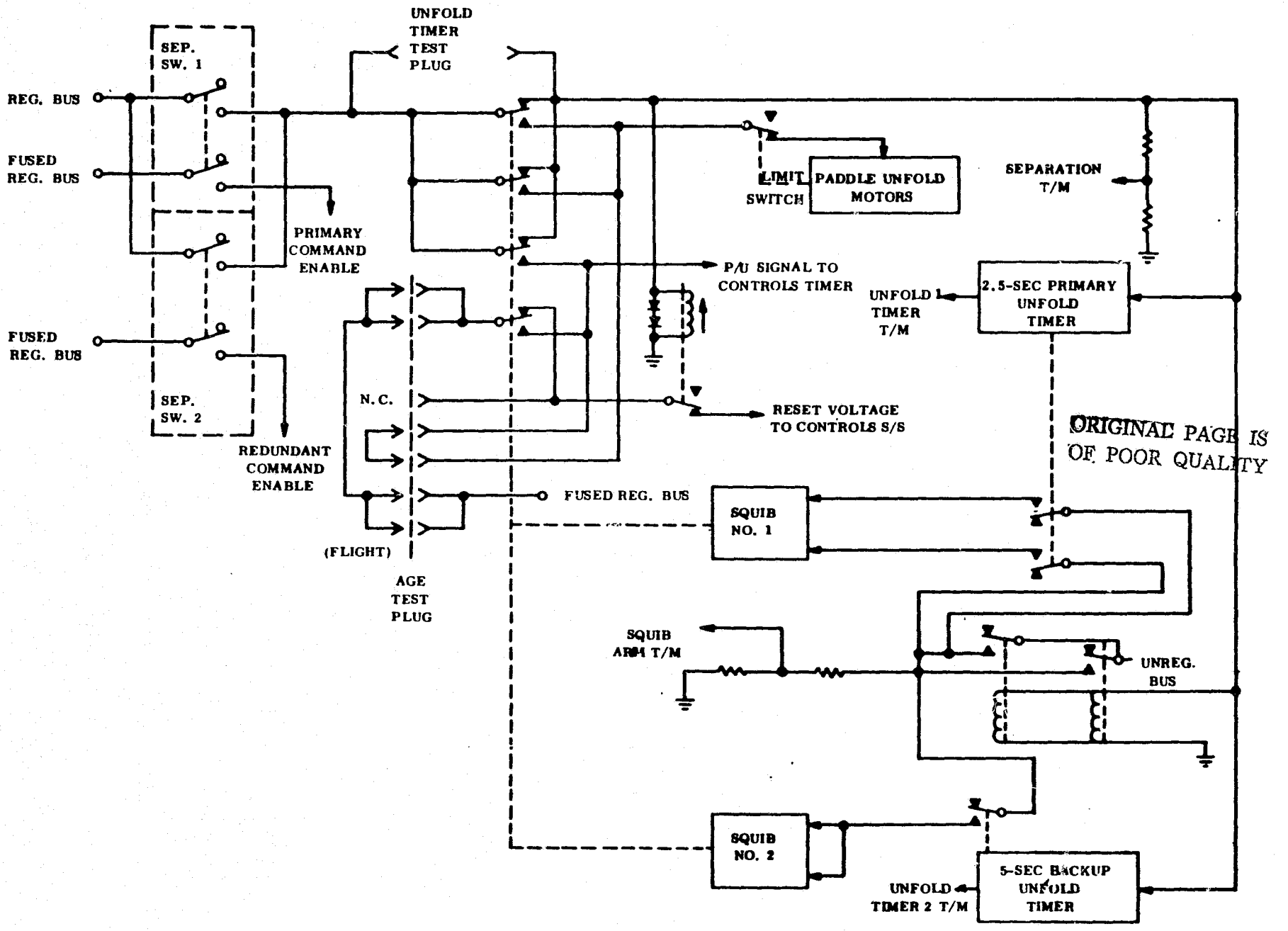

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Figure 12-3. Separation and Unfold Subsystem Functional Block Diagram

SECTION 13

ELECTRICAL INTERFACE SUBSYSTEM (EIS)

The EIS is a collection of three modules: The Auxiliary Processor Unit (APU) (See Figure 13-1 for functional block diagram); The Power Switching Module (PSM) (See Figure 13-2 for functional block diagram) and the Interface Switching Module (ISM). Together they perform a variety of electrical interfacing functions including: power switching, telemetry signal generation, switching logic, power fusing, signal switching (Data) time code processing automatic "shut-off" timers.

The EIS contains a variety of telemetry points all of which are associated with other subsystems and have been discussed in those sections.

The Launch mode of the APU is given in Table 13-1.

Table 13-1. APU Launch Mode

APU Subsystem	MODE	CMD	Verification
POWER	ON	656	POWER MODE OFF
MOD	STBY	050	
P/L TIMER	DIS	720	P/L TIMER ON/DISABLE
SEARCH TRACK	NORM	631	SEARCH TRACK DATA NORMAL
USB/WPA TIM	EN	755	VIP TIMER ON/DISABLE

APU was turned on in Orbit 5, and operated nominally. All functions of the EIS performed nominally.

Telemetry values for the APU are given in Table 13-2 and are nominal.

Table 13-2. Landsat-3 APU Telemetry Functions

Function	Description	Unit	T/V 20°C	P/B Oribit		
				6	31	43
13200	APU, -24.5 VDC	TMV	2.63	2.62	2.62	2.62
13201	APU, -12 Volts	TMV	2.42	2.42	2.42	2.42
13202	APU Temp	DGC	23.00	23.41	24.32	24.43

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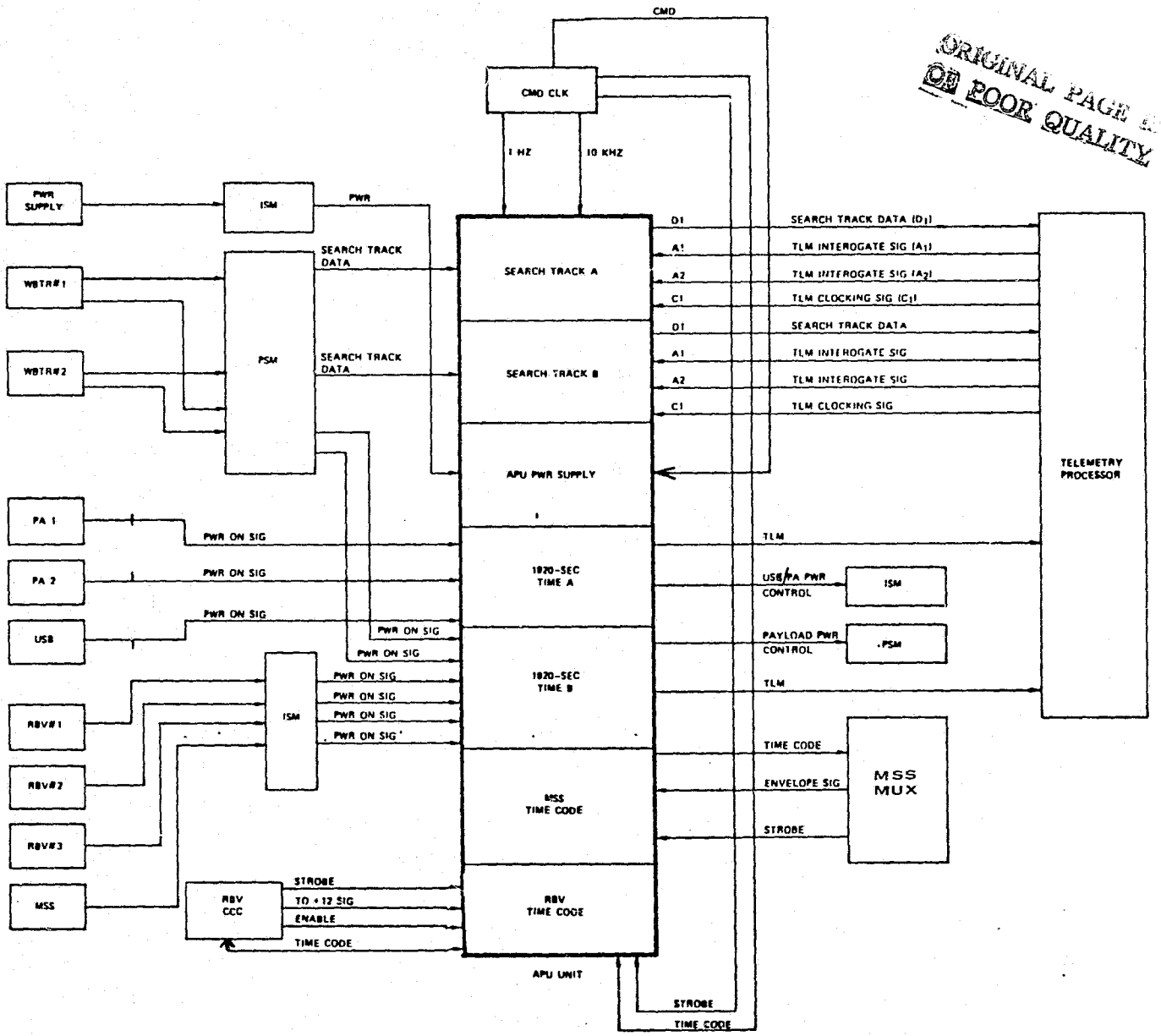

Figure 13-1. APU Functional Block Diagram

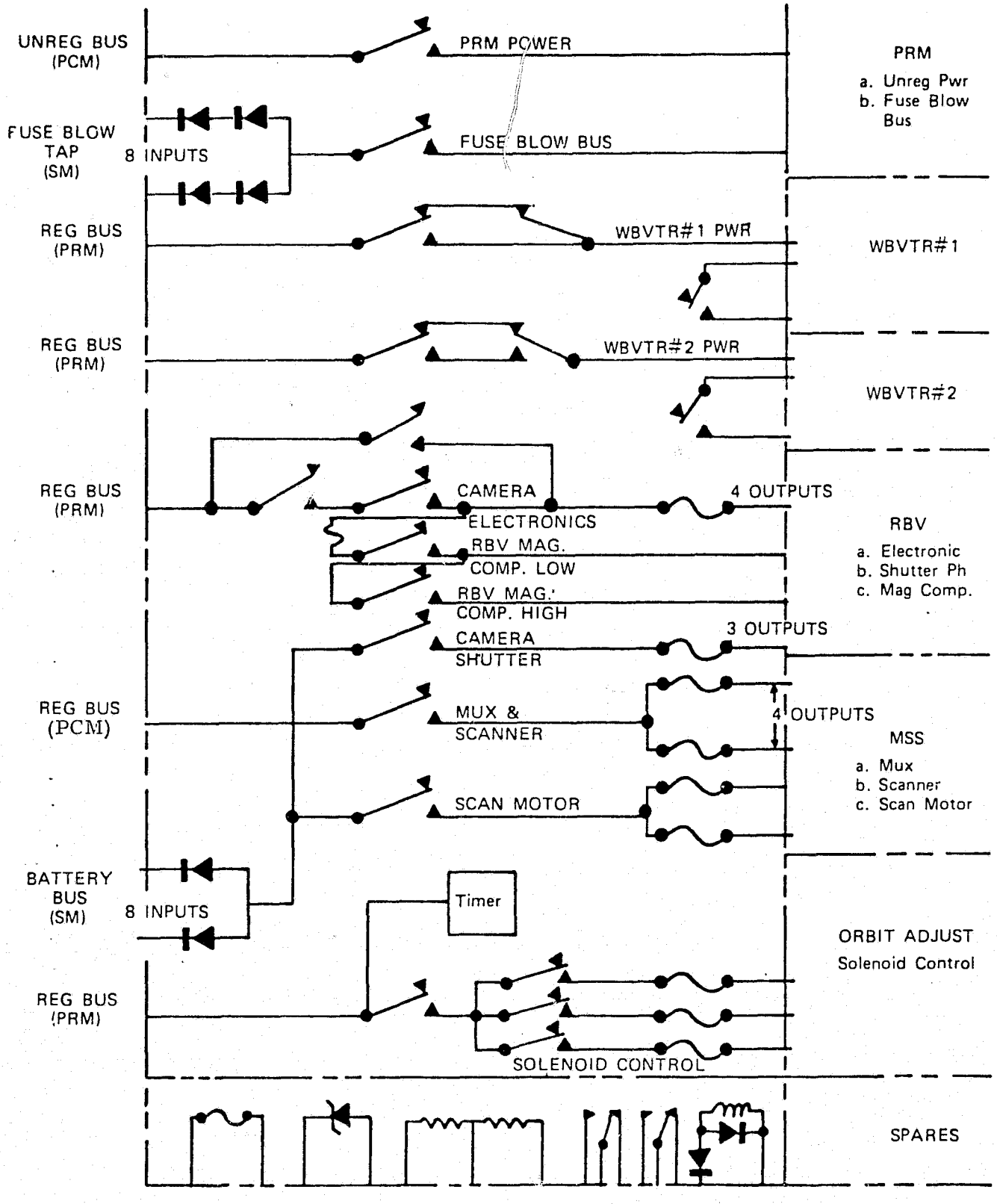

Figure 13-2. PSM Functional Block Diagram

SECTION 14

THERMAL CONTROL SUBSYSTEM (THM)

Thermal control of the spacecraft is required in order to provide a mounting surface temperature of 20° ± 10°C for all equipment mounting internal to the spacecraft. The Landsat-3 spacecraft is composed of three separate elements; the solar arrays, the Attitude Control Subsystem and the sensory ring. These elements are thermally decoupled such that the environment for mission support and payload equipment is provided by the sensory ring Thermal Control Subsystem. The subsystem is composed of both semipassive and passive elements. The semipassive elements are shutters and heaters. Shutters are located on 15 peripheral compartments and are actuated by two-phase fluid-fill bellows assemblies. The heaters are energized by ground command. Passive control, in the form of insulation and coatings, works in conjunction with the semipassive elements to maintain the thermal balance of the vehicle. Figure 14-1 is a block diagram of the Thermal Control Subsystem.

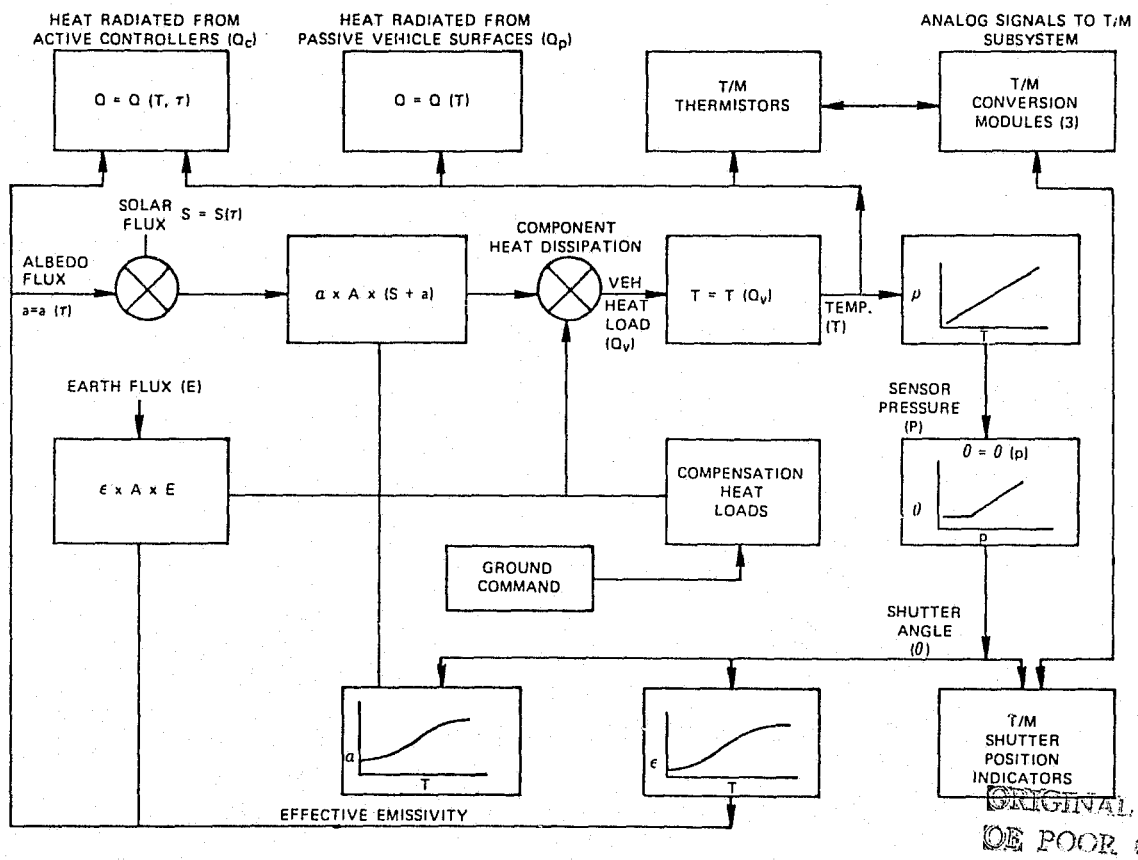

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Figure 14-1. Functional Block Diagram of Thermal Control Subsystem

In Landsat-3 the thermal control functions were balanced prior to launch and maintained their balance, within expected tolerances, throughout powered flight and orbital operations.

The thermal subsystem in both the sensory ring and the ACS performed within expected limits at all locations. All spacecraft component temperatures were in safe operating ranges.

Typical average temperatures were: ACS baseplate 19.5°C; sensory ring 18.7°C; and center section 15.3°C. The shutter position average at Orbit 50 was 22.6°.

Table 14-1 provides typical average telemetry values for the Zener modules obtained during early flight operations.

Table 14-1. Average Thermal Telemetry Values

Function No.	Function Name	Unit	20° T/V	Orbits		
				1	24	50
7080	TLM Conv. Mod. Q1 Thermistor Zener	VDC	4.92	4.91	4.92	4.93
7081	TLM Conv. Mod. Q2 Thermistor Zener	VDC	5.08	5.06	5.08	5.08
7082	TLM Conv. Mod. Q3 Thermistor Zener	VDC	5.05	5.05	5.05	5.05
7083	TLM Conv. Mod. Q1 Shutter Zener	VDC	5.02	5.02	5.01	5.01
7084	TLM Conv. Mod. Q2 Shutter Zener	VDC	4.90	4.90	4.90	4.90
7085	TLM Conv. Mod. Q3 Shutter Zener	VDC	5.03	5.02	5.05	5.03

*Thermal Vacuum Test Data

In Orbit 3 compensation loads 3, 4, 5, 7 and 8 were turned on to provide more even heating of the spacecraft until normal operation began. See Table 14-2 for a history of compensation loads applied through Orbit 50.

Table 14-2. Landsat 3 Compensation Load History

Orbit	Compensation Load Status*							
	1	2	3	4	5	6	7	8
Launch	O	O	O	O	O	O	O	O
3	O	O	X	X	X	O	X	X
15	O	O	X	X	X	X	X	X
32	O	O	X	X	X	O	X	X
34	O	O	X	X	X	X	X	X
48	O	O	O	O	O	O	O	O

*Note: X = ON
O = OFF

During this report period sun intensity was 1.016 time the mean value and decreasing. The Beta angle (or sun angle to the orbit plane) was 40.6 degrees and decreasing. With decreasing Beta angle will come longer spacecraft nights and shorter days. Therefore, spacecraft temperatures are expected to decrease slowly until June when seasonal variations of sun intensity and Beta angle will reverse and reverse the temperature trend.

Figure 14-2 shows a thermal profile of the average bay temperature around the sensory ring at Orbit 50. The spacecraft temperature will change from the orbit shown as operational payload profiles have not been established at the end of this report period. All bays and all components were in safe operating ranges. Table 14-3 gives average telemetry values for thermal functions in the activation period.

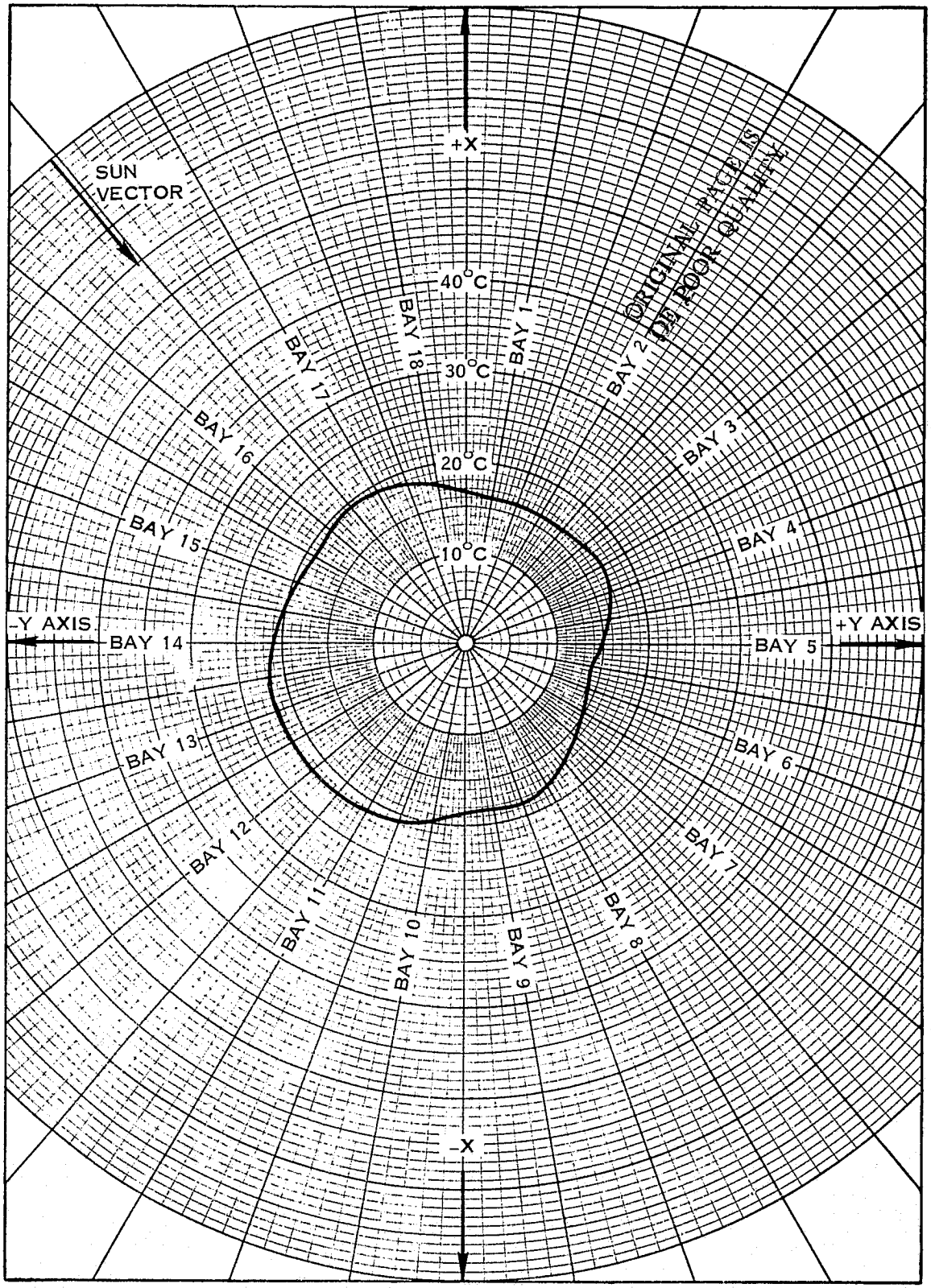

Figure 14-2. Landsat 3 Sensory Ring Average Temperatures
Orbit 50, 9 March 1978

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Table 14-3. Landsat 3 Thermal Subsystem Analog Telemetry (Average Value for Frames of Data Received in NBTR Playback)

Function No.	Function Description	Unit	Orbits		
			2 (0/1)	24	50
7001	THM TH02SBM	DGC	16.53	14.29	15.52
7002	THM TH01SBO	DGC	17.31	15.83	16.73
7003	THM TH03SBI	DGC	17.96	15.21	16.40
7004	THM TH10TCB	DGC	17.71	20.20	19.92
7005	THM TH11SBM	DGC	18.89	21.40	21.11
7006	THM TH05SBA	DGC	16.14	15.01	15.74
7007	OA-X THRUSTER	DGC	18.71	20.27	20.20
7008	THM TH02TCB	DGC	18.31	15.49	16.55
7009	THM TH07SBM	DGC	16.91	16.06	16.08
7010	THM TH08SBI	DGC	17.83	18.13	17.93
7011	THM TH09SBM	DGC	18.49	20.36	20.02
7012	THM TH10SBO	DGC	17.15	18.96	18.84
7013	THM Th04SBM	DGC	17.10	15.18	16.47
7014	THM TH11STO	DGC	18.71	20.40	20.46
7015	THM TH12SBI	DGC	19.56	21.65	21.64
7016	THM TH12STO	DGC	19.42	20.89	21.45
7017	RBV BEAM CTR LN	DGC	19.09	21.66	20.89
7018	THM TH13SBM	DGC	20.19	21.56	21.88
7019	NBR RAD OUTBDB4	DGC	10.37	2.46	2.73
7020	THM TH13STM	DGC	20.32	22.04	22.42
7021	THM TH14SBI	DGC	19.59	20.61	20.86
7022	THM TH14STO	DGC	19.54	20.23	20.48
7023	THM TH15SBM	DGC	19.80	19.46	19.95
7030	THM TH15STO	DGC	19.35	19.09	19.43
7033	THM TH05TCB	DGC	19.04	15.58	16.17
7035	THM TH18STM	DGC	18.90	17.64	18.04
7040	THM TH01TCB	DGC	17.65	15.48	16.45
7041	THM TH06STO	DGC	15.94	12.87	13.27
7042	THM TH03TCB	DGC	17.71	14.57	16.49
7043	THM TH04TCB	DGC	19.42	16.95	17.98
7044	THM TH17STO	DGC	18.30	17.22	17.99
7045	THM TH07TCB	DGC	17.77	16.19	16.16
7046	THM TH09TCB	DGC	18.19	19.13	18.83
7048	THM TH11TCB	DGC	19.29	21.67	21.59
7049	THM TH12TCB	DGC	19.47	21.03	21.45
7050	THM TH13TCB	DGC	20.44	22.02	22.25
7051	THM TH14TCB	DGC	19.70	20.24	20.75
7052	THM TH16TCB	DGC	19.22	19.04	19.57
7053	THM TH17TCB	DGC	19.24	18.13	18.98
7054	THM TH18TCB	DGC	18.54	16.64	17.23
7060	THM SHUTTER BAY 1	DEG	23.14	7.50	9.90
7061	THM SHUTTER BAY 2	DEG	8.73	0.00	0.00
7062	THM SHUTTER BAY 3	DEG	10.86	0.00	1.07
7063	THM SHUTTER BAY 4	DEG	20.66	0.33	6.60
7064	THM SHUTTER BAY 5	DEG	25.06	6.00	6.00
7065	THM SHUTTER BAY 7	DEG	13.17	0.00	0.00
7067	THM SHUTTER BAY 9	DEG	19.85	28.55	28.82
7068	THM SHUTTER BAY 10	DEG	9.02	32.35	30.27
7069	THM SHUTTER BAY 11	DEG	20.19	41.25	40.32
7070	THM SHUTTER BAY 12	DEG	21.02	38.03	40.17
7071	THM SHUTTER BAY 13	DEG	18.99	34.90	36.13
7072	THM SHUTTER BAY 14	DEG	9.38	10.50	13.76
7074	THM SHUTTER BAY 16	DEG	16.17	13.02	17.35
7075	THM SHUTTER BAY 17	DEG	9.42	8.50	18.29
7076	THM SHUTTER BAY 18	DEG	24.86	4.13	11.42
7080	THM Q1 T ZENER V	TMV	4.91	4.92	4.93
7081	THM Q2 T ZENER V	TMV	5.06	5.08	5.08
7082	THM Q3 T ZENER V	TMV	5.05	5.05	5.05
7083	THM Q1 S ZENER V	TMV	5.00	5.01	5.01
7084	THM Q2 S ZENER V	TMV	4.90	4.90	4.90
7085	THM Q3 S ZENER V	TMV	5.02	5.05	5.03
7090	THM THE CAMM	DGC	17.21	14.31	19.34
7091	THM IND ATTITUDE	DGC	18.69	20.99	21.11
7092	THM RBV RADIATOR	DGC	15.91	14.91	13.10
7093	THM RBVC CTR BM	DGC	17.75	20.24	17.80
7094	THM WBVTR BOOT	DGC	16.28	11.04	10.23
7095	THM WBVTR RAD CT	DGC	14.35	0.92	-1.22
7096	THM WBVTR STRAP	DGC	17.57	14.11	12.84
7097	THM WBMT BAY 1	DGC	17.71	19.30	17.05
7098	THM WBMT BAY 18	DGC	16.88	18.54	16.50
7099	THM WBVTR SEP 3	DGC	17.24	14.93	15.40
7100	THM WBVTR SEP 17	DGC	18.71	18.33	18.42
7101	THM WBVTR 1 CENT	DGC	18.07	18.58	16.46
7102	THM VTR2 BAY 4	DGC	17.96	15.07	15.75
7103	THM VTR2 BAY 15	DGC	18.30	18.43	18.42
7104	THM WBVTR2 CTR	DGC	18.03	17.31	16.52
7105	THM NBTRB SEP 6	DGC	18.93	15.79	15.98
7106	THM NBTRB SEP 1	DGC	18.97	20.21	20.40
7107	THM NBTR BM CTR	DGC	18.31	17.76	17.71
7108	THM MSS MOUNT 14	DGC	17.25	16.05	16.14
7109	OA-Y THRUSTER	DGC	21.51	22.91	23.15
7110	THM MSS WBVTR BM	DGC	17.96	14.08	13.97
7111	OA +X THRUSTER	DGC	17.23	17.01	16.80
7130	THM AVX P1 T	DGC	1.38	31.19	36.47
7131	THM AVX P2 T	DGC	9.16	27.50	33.24

SECTION 15

NARROWBAND TAPE RECORDER (NBTR)

The NBTR consists of a single-track recording mechanism and the associated electronics necessary for proper amplification and filtering of the RECORD and PLAYBACK signals and for control of the record mechanism. The recorder is completely contained in one box.

The NBTR records 1 KBPS data from the Telemetry Processor, and, upon command, plays back the stored data with simultaneous outputs to the VHF Transmitter and to the Premodulation Processor. The playback speed is 24 times the record speed, and the output data rate is therefore 24 KBPS. The NBTR erases the tape immediately after playback.

The recorder has a capacity for recording 210 minutes of data, and stops automatically when it reaches end-of-tape. Playback is accomplished on command, effecting a reversal in tape direction at 24 times the record rate. Playback can be commanded at any time before the recorder reaches end-of-tape.

The Landsat-3 spacecraft contains two Narrowband Tape Recorders, providing a total sequential recording capability of 420 minutes. A simplified block diagram of the Narrowband Tape Recorder is given in Figure 15-1.

The Narrowband Tape Recorders were launched in the record mode as shown in Table 15-1.

The launch mode was verified from telemetry on the CRT display and on the strip charts.

Table 15-1. Narrowband Tape Recorders Launch Mode

	MODE	CMD
NBTR 1	REC	543
NBTR 2	REC	601

Initial Turn ON

Prior to launch on March 5, 1978, NBTR1 was put in record at 17:33:34 GMT and NBTR2 was put in record at 17:30:09 GMT. In Orbit 1 at Alaska, NBTR-1 was played back at 19:26:56 GMT and returned to the Record mode at 19:37:45 GMT. NBTR-2 was played back at 20:44:44 GMT and returned to Record at 21:05:13 GMT to take its turn alternating with NBTR-1. Thereafter the recorders were alternated in the RECORD mode, and performed their PLAYBACK generally after 1 minute of overlap of the two recorders in the RECORD mode.

Table 15-2 gives a sample record history for subsequent orbits.

Table 15-3 shows typical telemetry values. All are nominal.

Table 15-4 shows the pre-launch performance of the NBTR's.

Table 15-2. Landsat-3 NBTR Record Times

P/B Orbit	NBR	Start Time	FME	End Time	FME	% Bad	% Smooth	STA.
1	A	17:34:01	1	19:24:09	414	0.00	0.13	ULA
2	B	17:30:33	1	19:38:17	480	0.01	0.12	MAD
2	A	19:38:01	1	21:05:13	328	0.00	0.07	ULA
3	B	21:05:13	1	22:49:45	393	0.00	0.10	ULA
4	A	22:49:45	1	00:30:49	380	0.00	0.09	ULA
5	B	00:30:49	1	01:56:25	322	0.04	0.04	ENT
6	A	01:56:57	1	03:50:01	425	0.00	0.18	ULA
7	B	03:49:45	1	05:30:49	380	0.00	0.04	ULA
8	A	05:30:33	1	07:14:01	389	0.00	0.09	ULA
9	B	07:19:53	1	08:59:05	373	0.25	0.33	ULA
51	B	07:19:21	1	09:23:21	466	0.03	0.61	MAD
52	A	09:23:05	1	12:12:09	635	0.01	0.52	GDS

Table 15-3. Narrow Band Tape Recorder Telemetry Values

Func. No.	Name	T/V 20°	Orbit 2/3	Orbit 30/31
10001	A-Motor Current (ma)			
	Record	179.70	179.38	182.47
	P/B	181.07	184.02	179.38
10101	B-Motor Current (ma)			
	Record	165.73	151.53	150.00
	P/B	164.64	143.87	142.34
10002	A-Pwr Supply Cur. (ma)			
	Record	172.33	170.95	167.57
	P/B	N	397.25	387.12
10102	B-Pwr Supply Cur. (ma)			
	Record	186.83	190.00	186.67
	P/B	N	419.94	406.62
10003	A-Recorder Temp (DGC)	23.1	23.26	20.43
10103	B-Recorder Temp (DGC)	24.0	20.87	19.35
10004	A-Supply Volt	-24.51	-24.37	-24.37
10104	B-Supply Volt	-24.53	-24.50	-24.38

N - Data Not Available

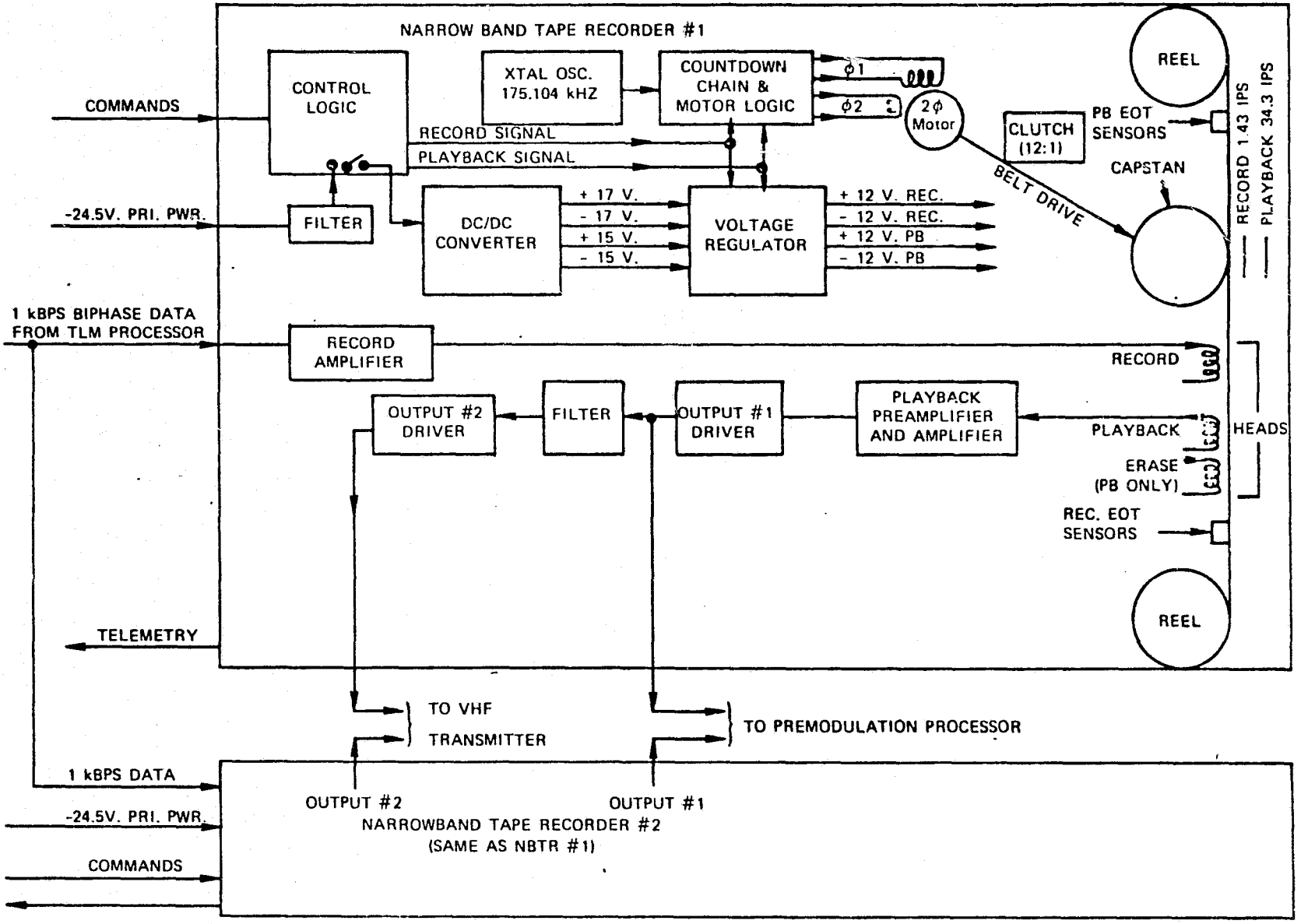

Figure 15-1. Narrowband Tape Recorder Block Diagram

Table 15-4. Pre-Launch Performance of the Narrowband Tape Recorder

Components

NBTR 1	EAB-FT6
NBTR 2	EAB-FT5

Pre-Launch Performance

Parameter	Spec	NBTR 1	NBTR 2
Record Time	≥210 min	216 min	216 min

Data quality judged by brush recorder outputs and computer synopsis - quality good

SECTION 16

WIDEBAND TELEMETRY SUBSYSTEM (WBTS)

The Wideband Telemetry Subsystem (WBTS) consists of two 10/20 watt S-Band FM Transmitters and associated filters, antennas, and signal conditioning equipment. The subsystem is used to transmit Return Beam Vidicon (RBV) video data and Multispectral Scanner (MSS) digital data to Landsat ground stations. The RBV and MSS data can be transmitted in real time as it is being generated, or recorded on either of two Video Tape Recorders, or both, and played back through the WBTS when in view of a ground station. A Functional Block Diagram is shown in Figure 16-1 and the physical configuration is illustrated in Figure 16-2.

The WBTS was launched in the OFF mode and in the configuration shown in Table 16-1. Verification of this mode was obtained in the telemetry from Madrid and Alaska playback early in Orbit 1.

Table 16-1. Launch Mode for WBTS

WBFM Subsystem			Verification
SEL VCO	A1	524	VCO A/B - 1/1
SEL VCO	B1	466	
MOD A AFC	EN	526	AFC A/B - 1/1
MOD B AFC	EN	567	
INV A PWR	OFF	566	INVERTER A SELECT
INV PWR/WBFM	A	641	
INV B PWR	OFF	527	
RBV FILTER	A	544	FILTER A RBV
MSS FILTER	B	576	FILTER B - MSS
RT 1/MSS FLT	B	475	M FIL B IN RT - 1 M FIL B IN NONE
RT RBV FLT	A	515	R FIL A IN RT R FIL B IN NONE
IN RBV/MSS FIL	B/A	666	FN 12200 R FIL A IN FN 12201 R FIL B OUT FN 12210 M FIL A OUT FN 12211 M FIL B IN
RBV BIAS	A	546	RBV BIAS VLT A
DATA WBPA	PRIME	705	DATA TO POWER AMPS NORMAL
WBPA			
WBPA ENA	PRIME/ RED	776/ 754	WPA POWER - BOTH
WBPA1	OFF	561	WPA 1 POWER - OFF
OUTPUT SEL 1	LO	541	WPA 1 POWER MODE -0-
WBPA2	OFF	067	WPA 2 POWER - OFF
OUTPUT SEL 2	LO	047	WPA 2 POWER MODE -0-

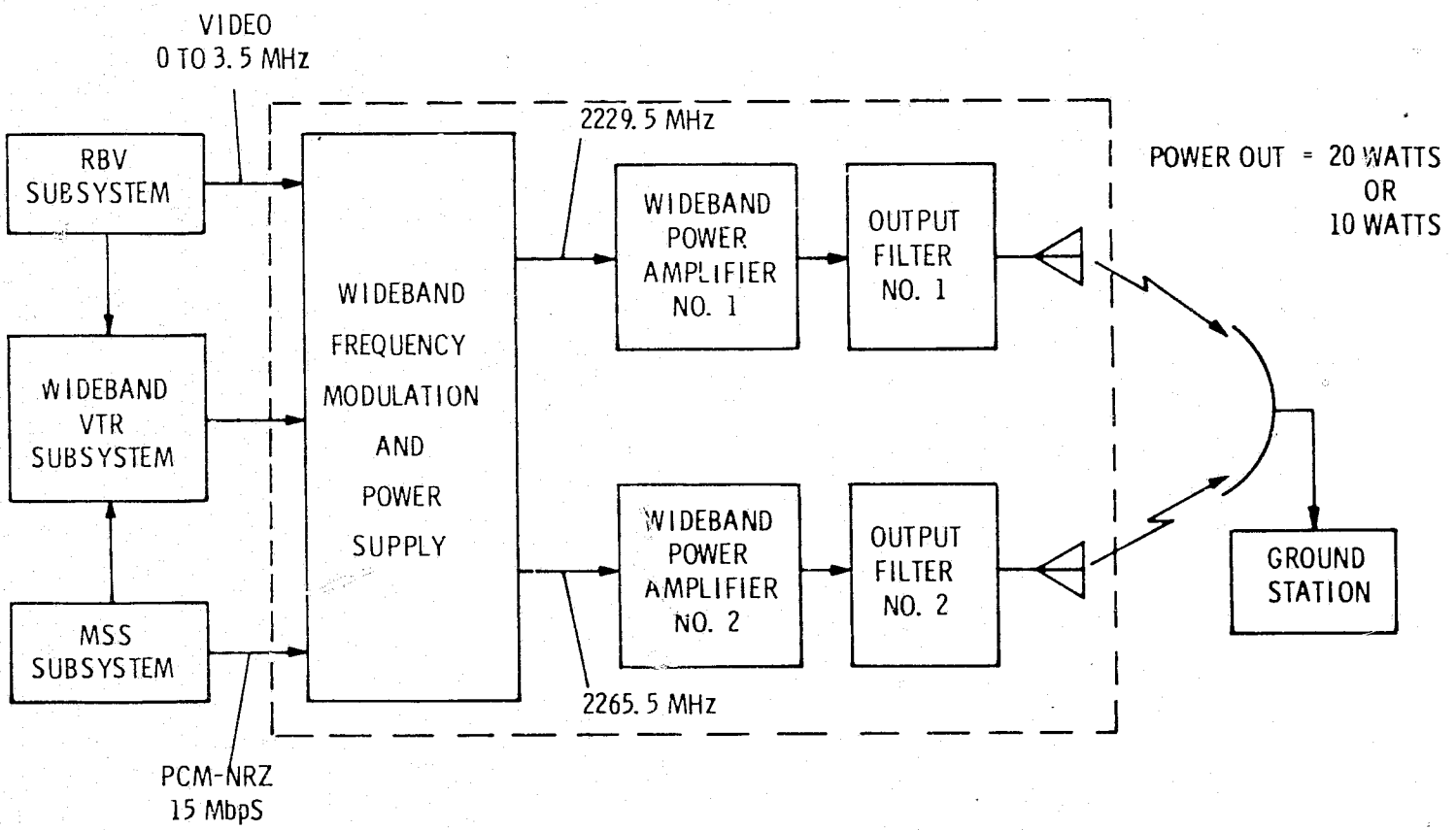

Figure 16-1. Wideband Telemetry Subsystem Block Diagram

The Wideband Telemetry Subsystem was initially turned on in the 10 watt mode in Orbit 12 while over Greenbelt. Both wideband power amplifiers were turned on with Inverter A ON. Filters A and B were both inhibited to allow only the unmodulated carrier to radiate.

In Orbit 13, both power amplifiers were turned ON in the 20 watt mode, again with input filters grounded.

In Orbit 14, both power amplifiers were turned on in the 20 watt mode, the grounding was removed from the filters and the inputs connected to RBV and MSS as in normal operation.

Performance was nominal in all the above operations.

Wideband Power Amplifier-1 was subsequently operated in playback and real time modes and operated normally throughout these tests, as shown in the telemetry values of typical orbits shown in Table 16-2.

Table 16-2. Typical Wideband Subsystem Telemetry

Function No.	Function Name	Units	20° T/V 20W	Orbit		
				16/17	34	50
12001	Temp TWT Coll.	DGC	34.10	31.42	39.38	F
12101			32.95	28.76	F	29.07
12002	Cur. Helix	MA	4.83	4.76	4.73	F
12102			5.59	6.48	F	6.50
12003	Cur. Cath	MA	44.87	44.51	44.50	F
12103			40.10	40.30	F	40.32
12004	Fwd. Pwr.	DBM	42.27	42.06	42.04	F
12104			42.83	42.87	F	42.46
12005	Refl. Pwr.	DBM	30.00	30.00	30.00	F
12105			30.90	31.32	F	31.80
12227	Mod A Volt Loop Stress	MHz	0.32	-14.00	-14.00	-14.00
12228	Mod B Loop Stress	MHz	0.65	1.77	-14.00	-14.00
12229	Temp. Mod	DGC	21.33	14.62	14.51	15.79
12232	+15 VDC Pwr Sply	TMV	2.70	2.68	2.68	2.68
12234	-15 VDC Pwr Sud	TMV	4.29	4.38	4.38	4.38
12236	+5 VDC Pwr Suply	TMV	4.05	4.05	4.05	4.05
12238	-5 VDC Pwr Sud	TMV	5.18	5.18	5.18	5.18
12240	-24 VDC Unreg Pwr	TMV	6.01	6.16	6.15	6.18
12242	Temp. Inv.	DGC	27.0	18.37	18.45	18.22

F = Unit Off

Prelaunch subsystem performance is shown in Table 16-3.

Table 16-3. Wideband Telemetry Subsystem

Components	S/N	Pre-Launch Operating Time
Wideband Power Supply	65495 10	330
Wideband Frequency Modulator	65495 07	268
Wideband Power Amplifier 1 & 2	101 & 100	147 & 173
Wideband Filters 1 & 2	5 & 7	135 & 172

Pre-Launch Performance

		Spec	Measured
Modulator A Freq. Stab.		2229.5 MHz	2220.5 MHz
			+0 KHz
		±379 KHz	-311
Modulator B Freq. Stab.		2265.5 MHz	2265.5 MHz
			+0
		±385 KHz	-386 KHz
Power Amp No. 1 Output	High	11.5W (40.5 dbm)	18.1W (42.6 dbm)
	Low	5.7W (37.7 dbm)	11.1W (40.3 dbm)
Power Amp No. 2 Output	High	11.5W (40.5 dbm)	20.2W (43.1 dbm)
	Low	5.7W (37.7 dbm)	10.5W (40.2 dbm)

PROBLEM SUMMARY

Problem	Resolution
PA No. 2 VSWR Intermittent	Antennas 1 & 2 reworked to Nimbus G configuration and retested OK

SECTION 17

ATTITUDE MEASUREMENT SENSOR (AMS)

The AMS is a passive readiometric balance sensor which operates in the 14 - 16 micron IR Band. This band pass was selected to take advantage of the earth's predictability in the 14-16 micron region, and to improve the off-null accuracy by ground based correction. The entire earth disk is imaged by a germanium lens to a focal surface containing four light pipes (four field of view sectors). See Figure 17-1 for functional block diagram, and Figure 17-2 for hardware illustration. AMS Telemetry Values are shown in Table 17-1.

The AMS was launched in the OFF mode (CMD 774), turned ON during Orbit 5 and has been performing normally since then.

Table 17-1. AMS Telemetry Values

Function No.		Units	Orbit		
			6	34	50
3004	Case - Temp 1	DGC	19.23	20.61	20.57
3005	Assembly - Temp 2	DGC	19.62	21.15	21.13

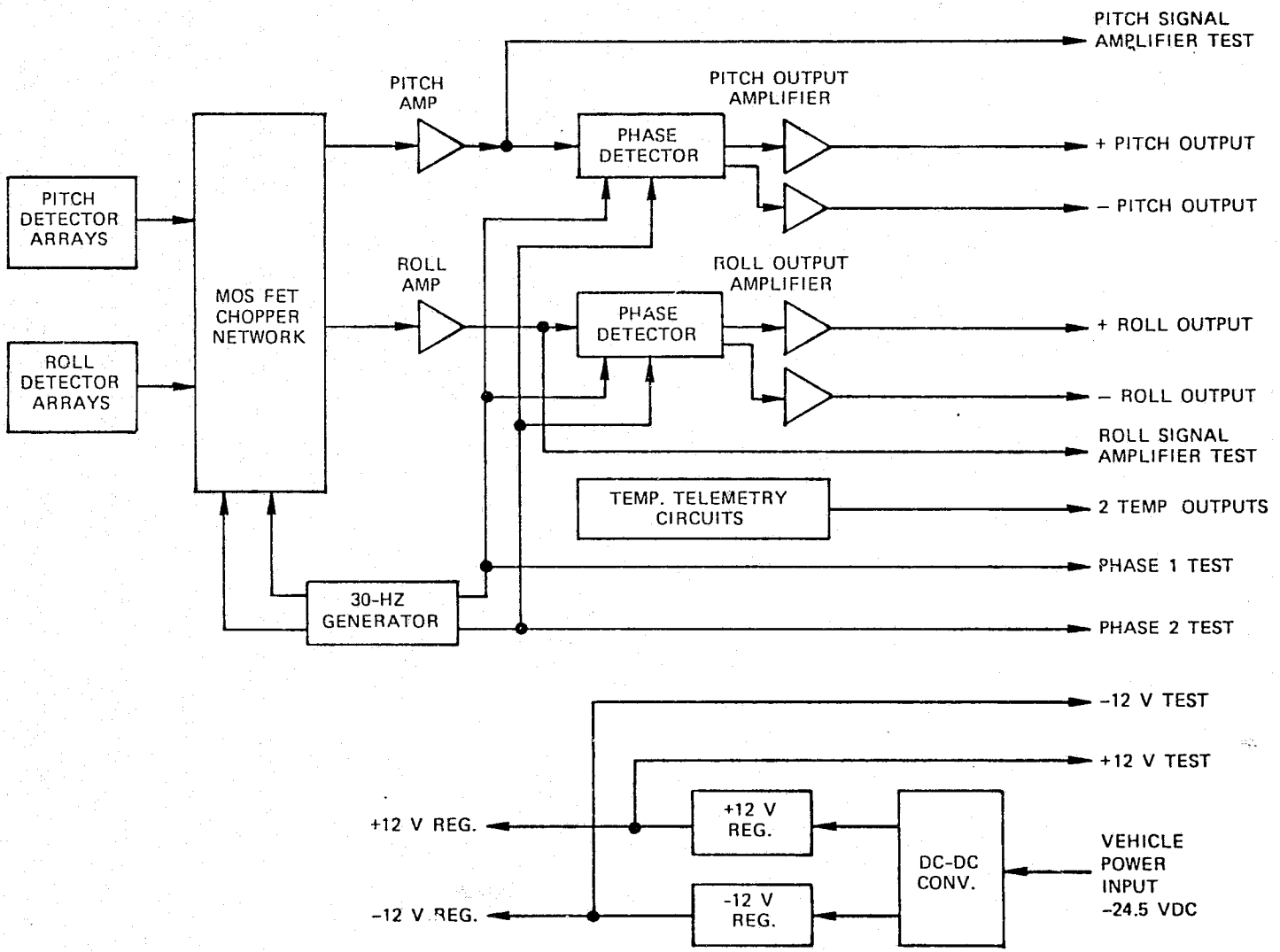

Figure 17-1. AMS Block Diagram

SECTION 18

WIDEBAND VIDEO TAPE RECORDERS (WBVTR)

The Wideband Video Tape Recorder (WBVTR) Subsystem is comprised of two rotating-head, magnetic tape recorders, each housed in two enclosures: (1) a pressurized housing for the Transport Unit (TU) and; (2) an unpressurized enclosure for the Electronics Unit (EU). The TU includes the transport mechanism, the video head wheel, record amplifiers, playback pre-amplifiers, and transport controls. The EU includes the record and playback formatting circuitry, the voltage converter, motor control circuits and command and control circuits.

The primary function of either WBVTR is to selectively record, store, and playback analog data from the Return Beam Vidicon (RBV) cameras or digital data from the Multispectral Scanner (MSS) Subsystem. Additional record and playback channels are provided on the tape. These include a prerecorded Search Track Signal for providing tape position information, an Auxiliary Track for recording PCM telemetry data, and a servo control track for playback speed control. A transverse recording technique utilizing four rotating heads is used for Wideband RBV and MSS data. The narrow band data, (servo control, PCM data, and search pattern) are recorded longitudinally with fixed heads. See Figures 18-1 and 18-2 for functional block diagrams. Figures 18-3, 4 and 5 show physical configuration.

The Wideband Video Tape Recorders 1 and 2 (WBVTR-1 and 2) were launched in the mode shown in Table 18-1. This launch mode was verified by OCC during prelaunch checkout at WTR, and subsequently by narrow band recorder playback from Alaska.

Table 18-1. Launch Configuration

WBVTR Subsystem		CMD	Verification
WBVTR 1	OFF	651	POWER OFF
WBVTR 2	OFF	712	POWER OFF
RBV STDY	1	464	STANDBY MODE RBV
MSS STBY	2	572	STANDBY MODE MSS
VO PROT 1	EN	554	VOLTAGE PROTECT ENABLE
VO PROT 2	EN	467	VOLTAGE PROTECT ENABLE
SEARCH TRACK	NORM	631	SEARCH TRACK - NORMAL

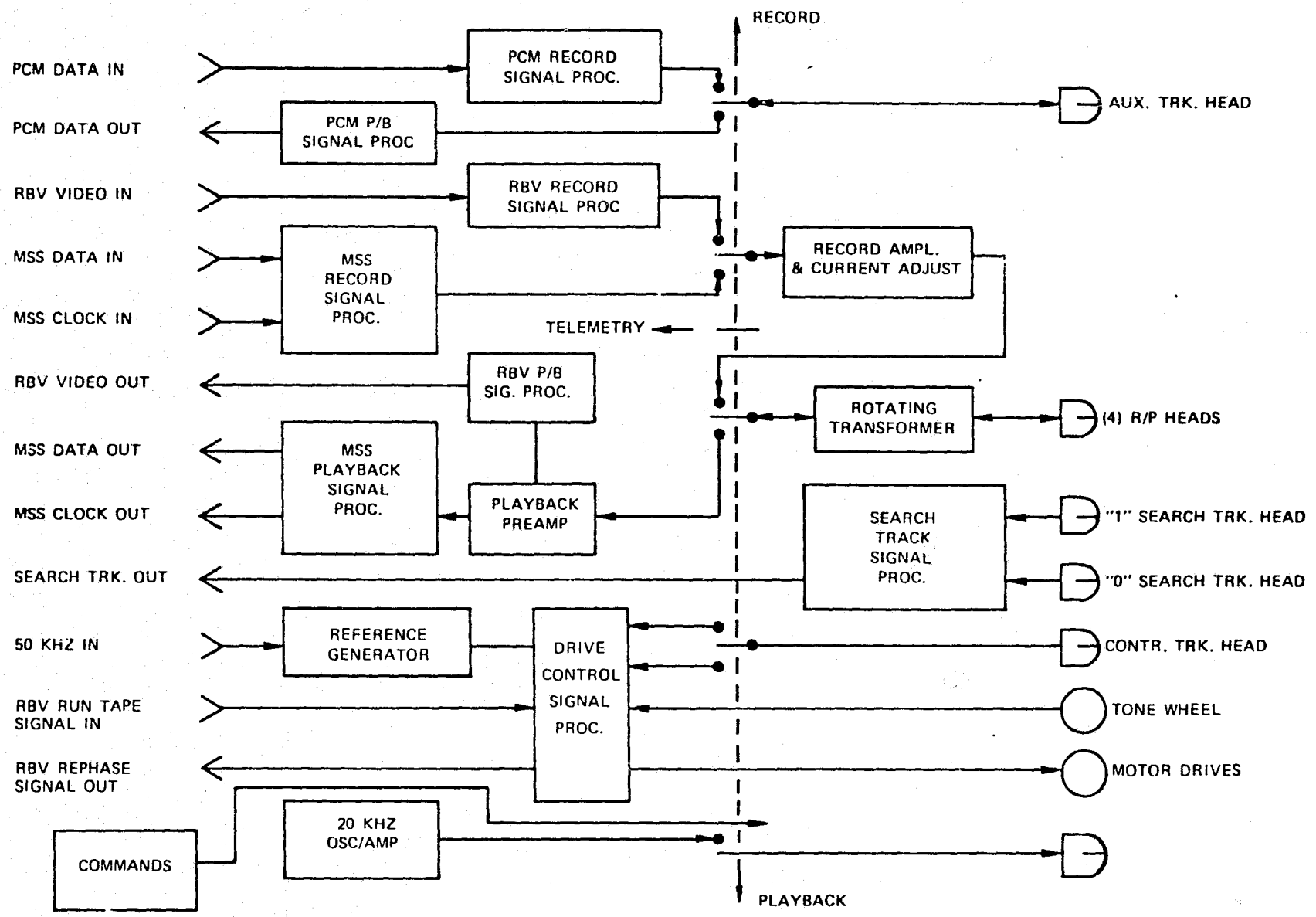

Figure 18-1. WBVTR Functional Block Diagram

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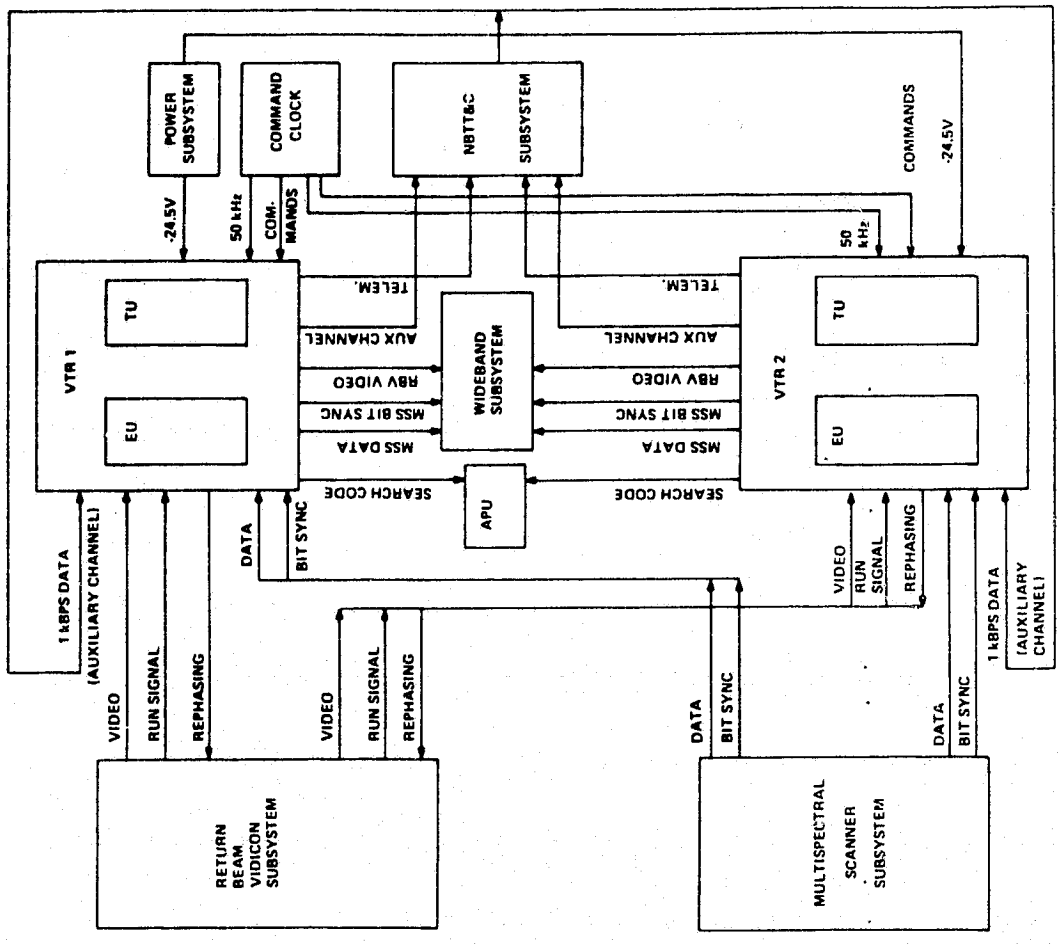

Figure 18-2. WBVTR Block Diagram

Initial activation of the WBVTR subsystem occurred in Orbit 5. Both recorders were rewound from their launch position near mid-tape for a duration of about 4 minutes. The applicable series of commands are shown in Table 18-2. The footage count of WBR-1 went from 921 to 24; the WBR-2 footage went from 938 to 35.

Table 18-2. Series of Commands for Initial Activation of WBVTR Orbit 5, (6 March 1978)

Time	Cmd	Activity
02:01:53	607	VTR-1 ON (PRIME)
02:01:55	464	VTR-1 RBV STANDBY
02:02:00	465	VTR-1 FAST REWIND
02:03:47	650	VTR-2 ON (PRIME)
02:03:49	572	VTR-2 MSS STANDBY
02:05:00	552	VTR-2 FAST REWIND
02:06:00	464	VTR-1 RBV STANDBY
02:06:02	651	VTR-1 OFF
02:09:04	572	VTR-2 MSS STANDBY
02:09:06	712	VTR-2 OFF

Table 18-3 shows the subsequent use of the WBVTR subsystem. All operations were nominal. Telemetry values are normal and are shown in Table 18-4.

Table 18-5 lists the components and ground operating time.

Table 18-3. History of WBVTR Use

Mode	Orbits	
	WBR-1	WBR-2
Record	33, (RBV Activation)	19, (MSS Activation)
Rewind	5, 33, 47	5, 31, 47
Playback	15, 43, 44, 47	16, 43, 44

Table 18-4. WBVTR Telemetry Values

WBVTR - 1

Function No.	Function Name	Mode	Units	20° T/V	Orbit 6,16,34	Orbit 42/45
13022	Tape Unit Pressure	ALL	PSIA	16.21	16.25	16.25
13023	Tape Unit Temp	ALL	DGC	18.82	15.26	16.08
13024	Elect, Unit Temp	ALL	DGC	18.76	16.35	18.42
13026	Capstan Motor Speed	Rec	%	101.65	101.64	101.64
		P/B	%	100.94	101.05	101.05
		Rewind	%	108.31	107.56	108.15
13027	Headwheel Motor Speed	Rec	%	101.41	101.13	101.13
		P/B	%	100.98	101.65	101.65
		Rewind	%	103.01	102.18	102.71
		Standby	%	102.95	102.71	102.71
13028	Capstan Motor Current	Rec	AMP	0.32	0.36	0.35
		P/B	AMP	0.34	0.39	0.40
		Rewind	AMP	0.20	0.22	0.23
13029	Playback Voltage	RBV	VPP	0.72	0.83	0.89
13030	Headwheel Motor Current	Rec	AMP	0.45	0.51	0.50
		P/B	AMP	0.45	0.50	0.48
		Rewind	AMP	0.40	0.44	0.41
		Standby	AMP	0.39	0.45	0.43
13031	Input Current	Rec	AMP	3.12	3.20	3.17
		P/B RBV	AMP	2.95	2.96	3.03
		Rewind	AMP	1.62	1.64	1.60
		Standby	AMP	1.36	1.27	1.28
13032	Limiter Voltage	P/B	VPP	1.36	1.38	1.38
13033	Servo Voltage	P/B	%	49.03	49.16	49.10
13034	+5.6V	ALL	VDC	5.48	5.74	5.67

WBVTR - 2

Function No.	Function Name	Mode	Units	20° T/V	Orbit 6,16,34	Orbit 42/45
13122	Tape Unit Pressure	ALL	PSIA	17.58	17.15	17.15
13123	Tape Unit Temp	ALL	DGC	19.02	16.15	16.79
13124	Elec. Unit Temp	ALL	DGC	19.08	16.48	19.62
13126	Capstan Motor Speed	Rec	%	104.62	98.35	98.35
		P/B	%	103.92	96.41	96.41
		Rewind	%	104.15	99.00	98.35
13127	Headwheel Motor Speed	Rec	%	104.00	104.70	104.09
		P/B	%	103.71	102.87	102.87
		Rewind	%	105.71	104.70	103.97
		Standby	%	106.11	104.70	104.10
13128	Capstan Motor Current	Rec	AMP	0.37	0.33	0.45
		P/B	AMP	0.34	0.30	0.28
		Rewind	AMP	0.18	0.18	0.18
13129	Playback Voltage	P/B MSS	VPP	0.59	0.57	0.58
13130	Headwheel Motor Current	Rec	AMP	0.44	0.48	0.43
		P/B	AMP	0.44	0.46	0.47
		Rewind	AMP	0.40	0.39	0.40
		Standby	AMP	0.40	0.45	0.42
13131	Input Current	Rec	AMP	2.46	2.39	2.39
		P/B MSS	AMP	2.77	2.73	2.79
		Rewind	AMP	1.31	1.18	1.20
		Standby	AMP	1.07	0.95	1.03
13132	Limiter Voltage	P/B	VPP	1.29	1.30	1.31
13133	Servo Voltage	P/B	%	50.16	50.49	50.29
13134	+5.6V	ALL	VDC	5.47	5.74	5.42

Table 18-5. WBVTR Components

- In Spacecraft

		Tape Contract Time
VTR 1	S/N FT 9	83 Hours
VTR 2	S/N FT 10	75 Hours

- Expected Life for Each Recorder - 1,000 Hours

SECTION 19

RETURN BEAM VIDICON SYSTEM (RBV)

Ground scene information is viewed through two Return Beam Vidicon (RBV) Camera Sensors as they are alternately exposed. The RBV sensors convert the scene information into low-level analog signals. The Camera Electronics convert this information into a video format that is fed to the Camera Controller Combiner (CCC), where the two camera videos are combined with sync, blanking, and timing signals and with coding information to produce a video format. The Camera Controller Combiner controls the operating modes of the cameras and the generation of the video signal. The cameras may be commanded for single exposure, cyclic exposure, and calibration. The video signal is either stored on a Wideband Video Tape Recorder for later playback, or transmitted in real time through the spacecraft Wideband Telemetry Subsystem. An auxiliary video signal from each camera may also be applied directly to the Wideband Telemetry System without passing through CCC. See Figure 19-1 for functional block diagram, and Figure 19-2 for physical illustration. An equipment list is shown in Appendix A.

The RBV subsystem was launched in the mode shown in Table 19-1. Verification of this mode was obtained by telemetry early in Orbit 1 at Winkfield and later by playback from Alaska.

Table 19-1. Return Beam Vidicon Subsystem Launch Mode

RBV Subsystem			
APERTURE CORR	OUT	431	APERTURE CORR OUT
EXPOSURE	3	453	EXPOSURE 3
CYCLE	CONT	470	CYCLE CONT
CATH REACT	OFF	371	CATH REACT OFF
THER MOD 1	EN	770	THERMAL MODE 1
THER MOD 2	EN	730	THERMAL MODE 2
RBV PWR	OFF	731	SYSTEM POWER OFF
CCC	OFF	432	CCC - POWER OFF
CAM 1	OFF	511	CAMERA 1 OFF
CAM 2	OFF	510	CAMERA 2 OFF
PRIMARY CONTROL	EN	351	PRIMARY CONTROL

INITIAL TURN-ON

The Return Beam Vidicon Subsystem (RBV) was first turned ON in Orbit 33, 8 March 1978. The CCC, Camera 1, Camera 2, and Calibration were exercised. Cal 2 level was higher than normal due to low battery voltage (night pass.) See Appendix E for explanation of condition. All telemetry was nominal.

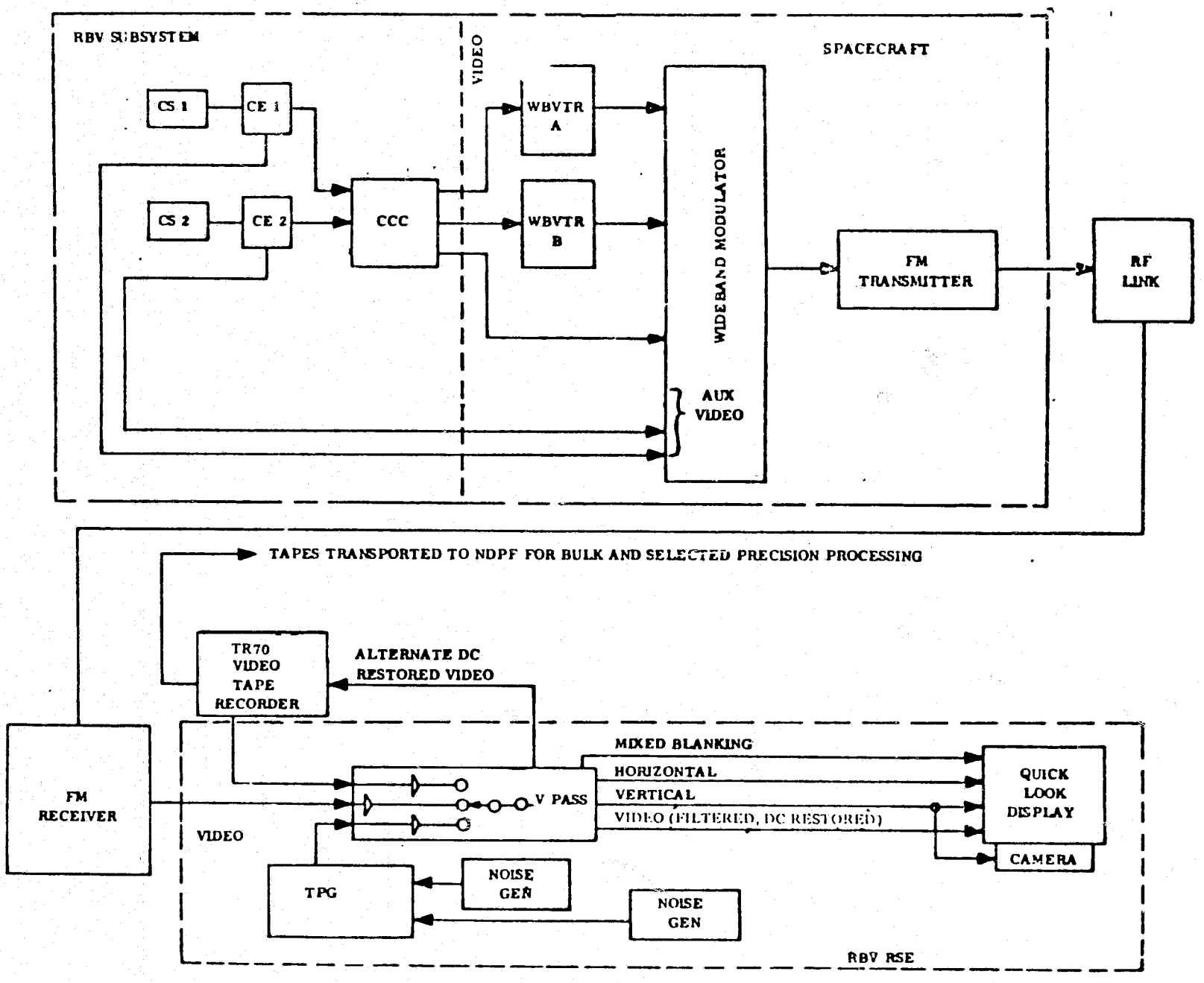

Figure 19-1. Return Beam Vidicon System Functional Block Diagram

Table 19-2. RBV Initial Turn-On, Orbit 33, 8 March 1978

Command	Time	Activity
540	02:04:02	WPA-1 POWER ON
607	02:06:01	VTR-1 ON (PRIME)
464	02:06:03	VTR-1 STANDBY
426	02:07:01	VTR-1 RECORD
411	02:07:02	RBV CCC POWER ON
667	02:07:02	RBV ON (PRIME)
731	02:08:30	RBV OFF
667	02:08:59	RBV ON (PRIME)
433	02:09:04	CAMERA 1 ON
511	02:11:00	CAMERA 1 OFF
731	02:11:09	RBV OFF
667	02:11:59	RBV ON (PRIME)
471	02:12:04	CAMERA 2 ON
510	02:14:00	CAMERA 2 OFF
731	02:14:10	RBV OFF
667	02:14:59	RBV ON (PRIME)
433	02:15:04	CAMERA 1 ON
471	02:15:09	CAMERA 2 ON
472	02:16:00	START CALIBRATE
511	02:16:51	CAMERA 1 OFF
510	02:16:52	CAMERA 2 OFF
731	02:16:54	RBV OFF
651	02:18:29	VTR-1 OFF
561	02:18:31	WPA-1 OFF

The RBV was turned on again in Orbit 41 on 8 March 1978 while over Greenbelt. The sequence of activities is shown in Table 19-2. Telemetry (Table 19-3), quick-look pictures, and the A-scope of the TR-70 all showed nominal sync pulses and video data.

Table 19-3. RBV Telemetry Values

Camera Controller Combiner						
Function No.	Function Name	Mode	Units	Orbit		
				T/V 20°C	34	42
14000	Rephase	From VTR 1	TMV	0.02	0.05	0.02
14001	CCC Bd. T		DGC	22.06	21.84	21.58
14002	CCC Ps T		DGC	24.11	23.39	23.01
14003	15 V Sply		TMV	3.99	4.00	3.97
14004	+6 -5.25 V		TMV	3.06	3.07	3.05

Camera 1						
Function No.	Function Name	Mode	Units	Orbit		
				T/V 20°C	34	42
14100	Video Out		TMV	1.41	0.83	2.23
14101	Focus I	Prep	TMV	1.76	1.65	1.62
14101	Focus I	Read	TMV	2.90	2.77	2.77
14102	Align I		TMV	4.16	4.15	4.15
14105	DEFL PS		TMV	3.95	4.02	4.02
14106	LV PW S		TMV	3.75	3.77	3.77
14107	Thermo I		TMV	2.66	3.02	2.77
14108	Fil I		TMV	2.55	2.62	2.57
14109	Grid V	Prep	TMV	0.72	0.70	0.70
14109	Grid V	Read	TMV	2.20	2.20	2.20
14110	Target V		TMV	3.47	3.55	3.55
14111	Cath I	Prep	TMV	3.12	3.10	3.10
14111	Cath I	Read	TMV	0.77	0.77	0.77
14112	Hor. Def.	Prep	TMV	2.04	2.00	2.02
14112	Hor. Def.	Read	TMV	3.47	3.42	3.45
14113	Vert. Def.		TMV	3.03	3.20	2.95
14120	+500 V	Prep	TMV	1.05	1.05	1.05
14120	+500 V	Read	TMV	4.20	4.17	4.17
14114	FCPLT T		DGC	21.94	19.41	20.78
14115	Y/FCT		DGC	25.40	20.35	20.90

Camera 2						
Function No.	Function Name	Mode	Units	Orbit		
				T/V 20°	34	42
14200	Video Out		TMV	1.40	0.76	2.14
14201	Focus I	Prep	TMV	1.63	1.57	1.57
14201	Focus I	Read	TMV	2.77	2.70	2.70
14202	Align I		TMV	4.15	4.13	4.13
14205	DEFL PS		TMV	4.05	4.05	4.08
14206	LV PW S		TMV	3.73	3.75	3.75
14207	Thermo I		TMV	2.57	2.57	2.60
14208	Fil I		TMV	2.55	2.38	2.44
14209	Grid V	Prep	TMV	0.55	0.55	0.55
14209	Grid V	Read	TMV	1.90	1.90	1.90
14210	Target V		TMV	3.29	3.06	3.15
14211	Cath I	Prep	TMV	3.31	3.30	3.30
14211	Cath I	Read	TMV	0.91	0.90	0.90
14212	Hor. Def.	Prep	TMV	1.69	1.67	1.67
14212	Hor. Def.	Read	TMV	3.02	3.00	3.02
14213	Vert. Def.		TMV	2.95	2.78	2.75
14220	+500 V	Prep	TMV	1.10	1.10	1.10
14220	+500 V	Read	TMV	4.22	4.25	4.25
14214	FCPLT T		DGC	21.45	20.69	20.78
14215	Y/FCT		DGC	20.93	20.86	20.90

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SECTION 20

MULTISPECTRAL SCANNER SUBSYSTEM (MSS)

The Multispectral Scanner (MSS) system consists of spacecraft and ground equipment which permits images of the earth to be obtained simultaneously in 5 spectral bands, from 0.5 to 1.1 and 10.4 to 12.6 micrometers (microns) wavelength, and scans cross track swatches of 0.5 km width (at a 496-nm altitude), imaging six scan lines across in each of band 1 thru 4 and 2 scan lines in band 5 simultaneously. The object plane is scanned by means of an oscillating flat mirror between the scene and the double reflector telescope optical chain. The 11.56 degree cross-track field-of-view is scanned as the mirror oscillates approximately $\pm$2.89 degrees 13.62 times per second about its nominal position as shown in Figure 20-1.

The instantaneous field-of-view of each detector subtends an earth-area square of 256 feet on a side from the nominal orbit altitude. Field stops are formed for each line imaged during a scan, and for each spectral band, by the square input end of an optical fiber. Six of these fibers in each of four bands are arranged in a 4 x 6 matrix in the focal plane of the telescope. Relay optics serve the 2 sensors of Band 5. See Figure 20-2 for functional block diagram, and Figure 20-3 for pictorial view.

The Multispectral Scanner (MSS) was launched in the OFF mode, except that the Rotating Shutter was ON to distribute the launch mode stresses around the bearing. The complete launch configuration is shown in Table 20-1. Verification of this configuration was obtained from telemetry in Orbit 1.

In Orbit 1 at Alaska, the rotating shutter (and the primary power switch for MSS) was commanded OFF.

The initial turn-on of the MSS subsystem Bands 1 thru 4 was in Orbit 19 during a nighttime Greenbelt pass. Telemetry values, video and strip charts were normal.

Initial turn ON of Band 5 will take place March 21, 1978.

The MSS was also operated in Orbits 27 and 28 in realtime. Line length, as measured by the lights on the Demux, was 3186 words. Typical telemetry values are shown in Table 20-2.

In Orbit 49 a sun calibration was performed while over Alaska. Configuration was prime, compressed, low gain. The results as reported by Alaska are shown in Table 20-3. Values are substantially higher than in Landsat-2, attributable, at least in part, to the low sensor temperatures (11^{o}) which increase sensitivity.

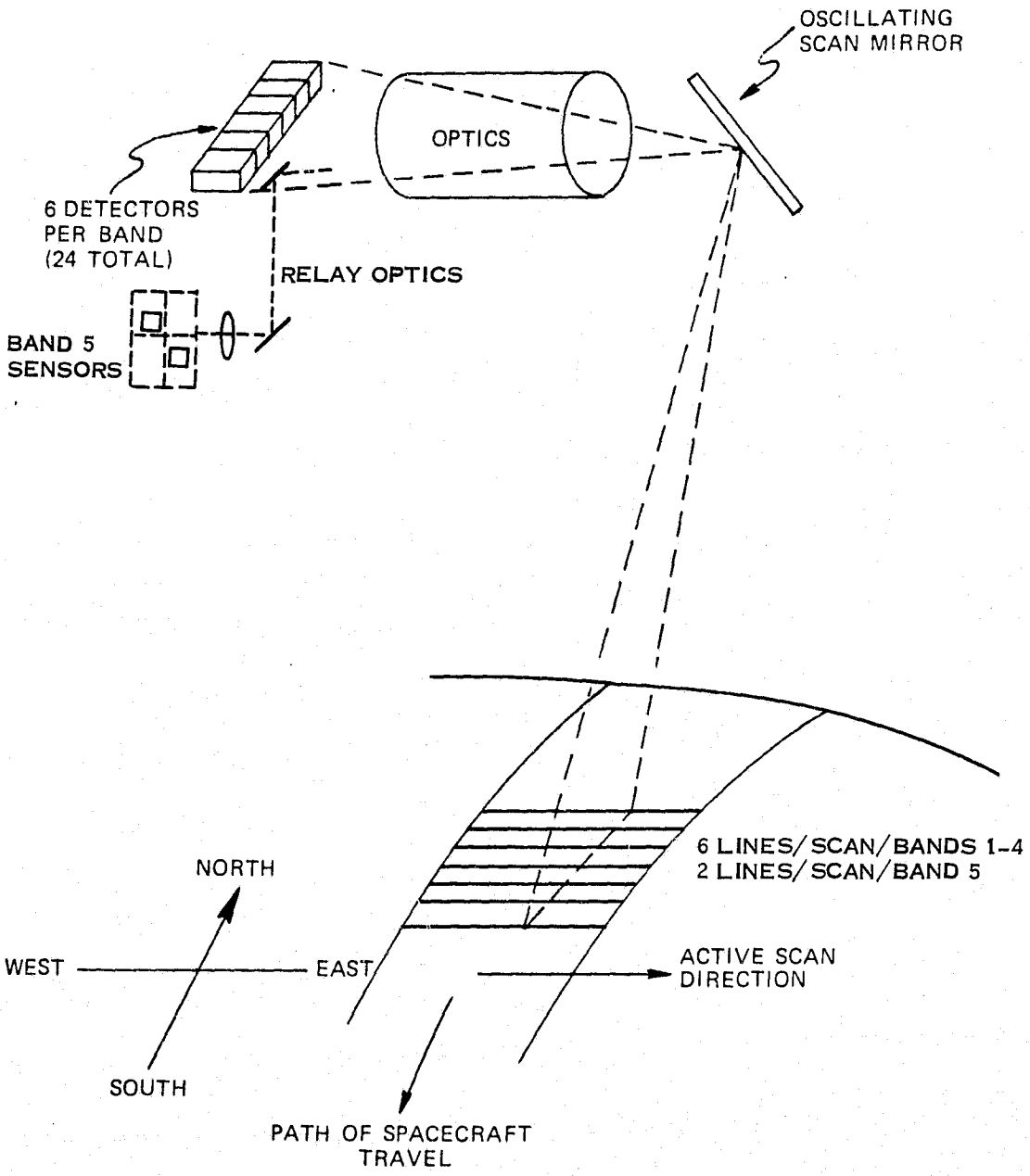

Figure 20-1. MSS Scanning Arrangement

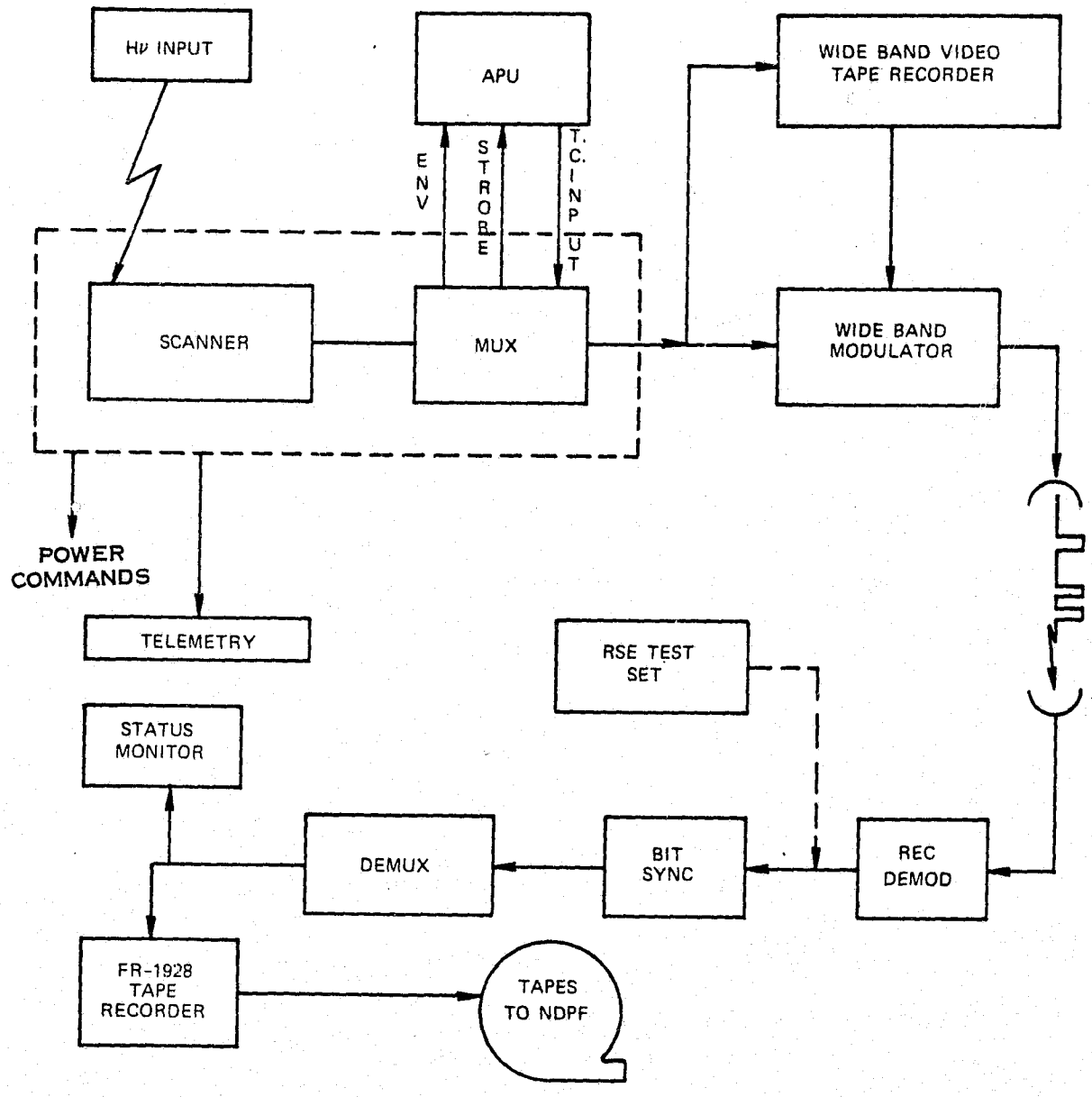

Figure 20-2. Simplified Functions Block Diagram of the Overall MSS System

Table 20-1. Multispectral Scanner Subsystem Launch Mode

	Mode	Cmd.	Verification
MSS ENABLE	BOTH	632	SYSTEM ENABLED
BAND 1	OFF	076	LV BAND 1, 2 OFF
BAND 2	OFF	132	
BAND 3	OFF	135	LV BAND 3, 4 OFF
BAND 4	OFF	134	
BAND 5	OFF	137	LV BAND 5 OFF
BAND 1 HV	A	054	HV BAND 1 OFF A
BAND 1 HV	OFF	176	
BAND 2 HV	A	055	HV BAND 2 OFF A
BAND 2 HV	OFF	233	
BAND 3 HV	A	056	HV BAND 3 OFF A
BAND 3 HV	OFF	232	
SHUTTER MON SOURCE	A	214	ROT SHUTTER ON A
ROT SHUTTER	ON	152	
CAL LAMP	A	117	CAL LAMP OFF A
CAL LAMP	OFF	177	
SELECT SCAN MON	A	255	SCAN MON OFF A
SCAN MON	OFF	172	
SCAN MIRROR	INH	256	SCAN MIRROR INH 1
SCAN MIR PWR	1	312	
MIR SCAN	OFF	335	MID SCAN CODE OFF
MUX	INH	276	MUX INHIBIT
MUX MODE	COMP	315	MUX COMPRESSION MODE
HEATER	OFF	337	HEATER OFF
BAND 1 GAIN	LO	175	1/2 GAIN L/L
BAND 2 GAIN	LO	174	
DOOR MOTOR POWER	OFF	133	DOOR POWER OFF
DOOR DIRECTION	CLOSE	234	DOOR CLOSE
DOOR OVERRIDE RESET	RESET	273	DOOR RESET
DOOR HOLD	ON	254	DOOR HOLD ON
DOOR OVERRIDE SAFETY	SAFE	313	DOOR SAFE
RADIATION COOLER PWR	OFF	332	COOLER PWR OFF
MAG COMP	OFF	070	MAG COMP OFF
MSS SYSTEM	ON	053	SYSTEM A ON

Table 20-2. MSS Typical Telemetry Values

Function No.	Function Name	Units	TV 20°C	20	28	50
15021	Band 5 -15 V	TMV	4.91	F	F	F
15022	Bnds Pa Case Temp	DGC	13.18	F	F	F
15025	Ch 25 Bias	TMV	3.91	F	F	F
15026	Ch 26 Bias	TMV	3.86	F	F	F
15040	Mux -6 Vdc PS	VDC	6.19	6.19	6.19	6.19
15041	A/D Conv Rep Sup	VDC	3.60	3.60	3.60	3.60
15042	Avg Den Data Trans	TMV	1.75	0.0	2.62	1.92
15043	Fiber Opt Plate T	DGC	17.76	13.89	14.25	13.92
15044	Fiber Opt Plate T	DGC	16.64	12.78	13.14	12.66
15045	Multiplexer Temp	DGC	20.53	19.02	19.74	18.37
15046	Elect. Cover Temp	DGC	21.46	16.02	17.07	14.23
15047	Power Supply Temp	DGC	20.59	15.23	16.02	14.31
15048	Scan Mirror Reg Temp	DGC	19.62	12.59	13.11	12.61
15049	Scan Mirror Drive Elect. T	DGC	20.52	15.18	15.18	12.94
15050	Scan Mirror Drive Coil T	DGC	19.72	12.59	13.11	12.69
15051	Scan Mirror Temp	DGC	18.96	11.55	12.07	12.25
15052	Rot Sht Hsg Temp	DGC	18.03	14.07	14.44	13.93
15053	Scn Mirror Reg Volt	VDC	23.26	18.30	18.20	18.30
15054	Cal Lamp Current	MA	112.51	112.5	112.5	112.50
15055	BD 1 15 V Reg	TMV	5.07	5.07	5.07	5.07
15056	BD 2 15 V Reg	TMV	5.05	5.05	5.05	5.05
15057	BD 3 15 V Reg	TMV	5.10	5.10	5.10	5.10
15058	BD 4 15 V Reg	TMV	5.02	5.02	5.02	5.02
15059	TLM Reg -15 V	VDC	-15.15	-15.17	-15.17	-15.17
15060	SM Reg +12/-6 Vdc	TMV	5.00	5.00	5.00	5.00
15061	+5 Vdc Logic Reg.	TMV	4.87	4.85	4.85	4.90
15062	+19 V Rect Out	TMV	5.89	6.00	6.02	6.02
15063	-19 V Rect Out	TMV	4.23	4.30	4.30	4.30
15064	BD 1 HVA Mon	TMV	5.00	5.00	5.00	5.00
15065	BD 1 HVB Mon	TMV	4.95	F	F	F
15066	BD 2 HVA Mon	TMV	5.00	5.03	5.05	5.04
15067	BD 2 HVB Mon	TMV	4.88	F	F	F
15068	BD 3 HVA Mon	TMV	5.00	5.00	5.00	5.00
15069	BD 3 HVB Mon	TMV	4.97	F	F	F
15070	Shtr Mtr Con. Int	TMV	2.52	2.55	2.55	2.55
15071	Scan Mirror Drive	VDC	-8.00	-7.950	-7.95	-7.95
15080	Rad Cool 1st	DGC	N	-29.16	-28.92	-29.00
15081	Rad Cool 2nd	DGC	N	-29.24	-28.96	-29.34

* - Telem OFF
F - Unit OFF
N = Data Not Available

Table 20-3. MSS Sun Calibration in Orbit 49 Reported by ALASKA

START TIME OF SUN CAL PULSE	05:47:25
DELAY TIME FROM LINE ST. (MS)	16
PEAK AMPLITUDE	
SENSOR	VOLTS (on 4V FULL SCALE)
2	3.6
5	3.8
8	4.0
12	3.9
15	3.9
18	3.5
20	2.2
23	2.3

SECTION 21

DATA COLLECTION SUBSYSTEM (DCS)

The Data Collection System is designed to relay data from randomly distributed Data Collection Platforms (DCP) through the Landsat-3 spacecraft to receiving sites at Greenbelt, Md., Goldstone, Calif. and Fairbanks, Alaska. The DCS system is designed to collect and provide at least one message from each of up to 1000 Data Collection Platforms in the continental United States every 12 hours, with a probability of 0.95, with a nominal Landsat orbit and both ground stations operating. See Figure 21-1 for system description, Figure 21-2 for functional block diagram, and Figure 21-3 for pictorial view.

The Data Collection System was launched in the mode shown in Table 21-1. Verification of this mode was obtained by CRT displays and strip charts from telemetry received from Madrid and playback from Alaska early in Orbit 1.

Table 21-1. Data Collection System Launch Mode

	Mode	CMD
Receiver 1	OFF	407
Receiver 2	OFF	406

DCS Receiver No. 1 was turned ON in Orbit 5, and has been left ON since. The equipment operated normally.

Overall performance of the Data Collection System during the remaining orbits has been well within the system design. Figure 21-4 shows the messages received per orbit for the last 38 orbits the DCS was operational in Landsat-2 and for the first 38 orbits the DCS was operational in Landsat-3. The peak in orbit 33 was due to a malfunctioning ground platform. It shows that the effectiveness of the DCS with Landsat-3 is as high as that with Landsat-2.

Telemetry values are shown in Table 21-2.

Table 21-3 describes pre-launch subsystem performance.

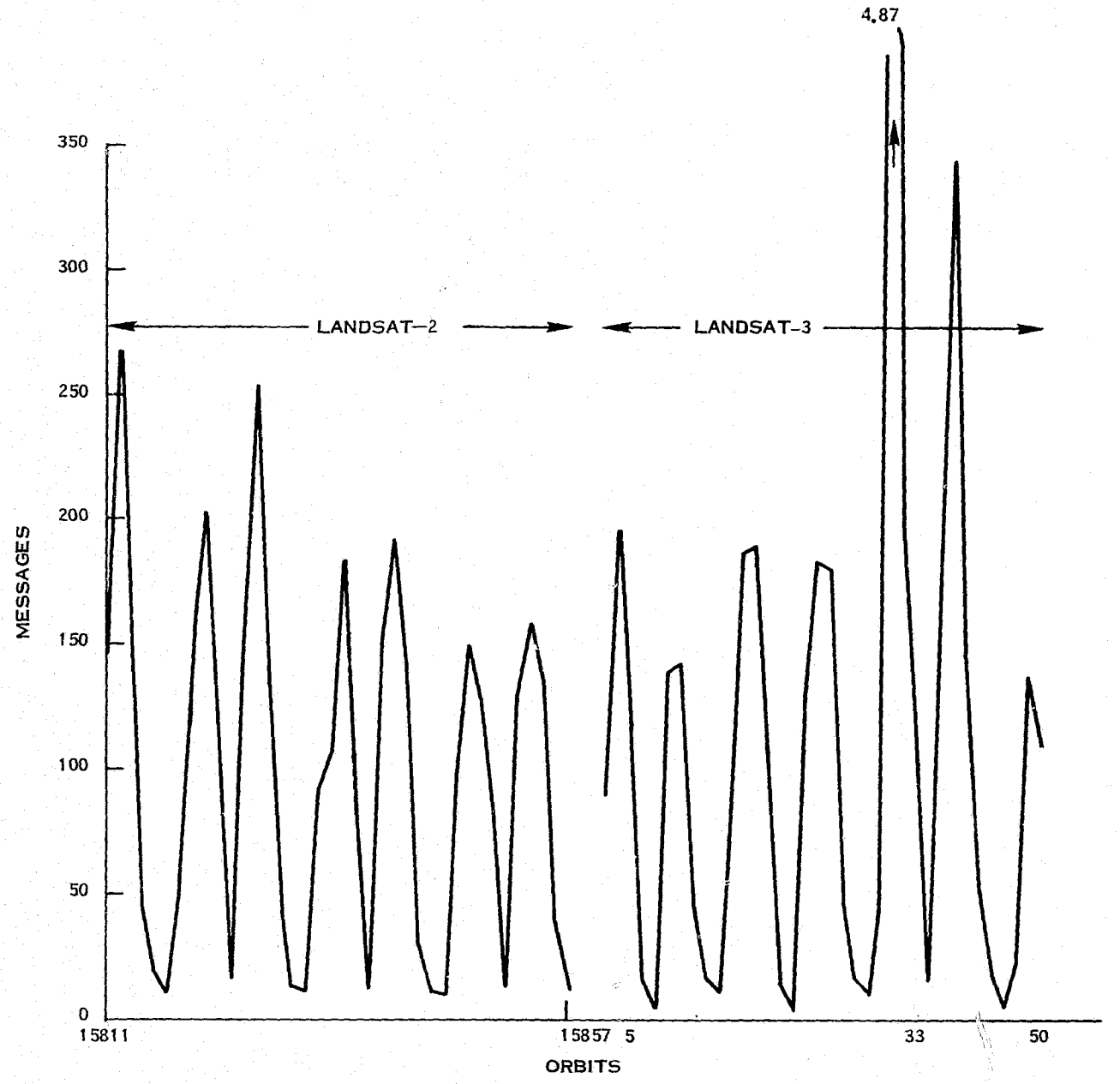

Figure 21-4. DCS Messages per Orbit

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Table 21-2. DCS Telemetry Values

Function No.	Name	T/V 20°C	Orbits		
			6	30	43
16001	Receiver 1 Sig Strength (DBM)*	-119.57	-125	-131	-125
16002	Receiver 1 Temp (DGC)	20.0	19.21	19.58	19.05
16003	Rec-1 Pwr Input Volt (VDC)	2.35	2.35	2.35	2.35
16004	Receiver 2 Sig Strength (DBM)	-122.48	F	F	F
16005	Receiver 2 Temp (DGC)	21.5	F	F	F
16006	Receiver 2 Input Volt (VDC)	2.60	F	F	F

* This value is for a CW carrier only; it is not valid during DCS message reception
F = Unit OFF

Table 21-3. DCS Subsystem

- Component

Receiver A	S/N EAB-QM-1	(Qualification Unit)
Receiver B	S/N EAB-EM-1	(Reworked Engineering Unit)

- Pre-Launch Performance

DCS Performance	Level	Receiver No. 1	Receiver No. 2	Spec
Dynamic Range	-70 to -121 DBM input signal strength	2.0 PP	2.0 PP	2.0 ± 0.2 PP
Translation Frequency	400.525 MHz ± Δ	Δ + 0.9 KHz	Δ = -5.4 KHz	Δ ≤ ± 6 KHz
Receiver Density	Carrier/Noise (C/N_o) -120 dBm	3.0 dB sig. suppression (C/N_o = 50 dB-Hz)	3.5 dB sig. suppression (C/N_0 = 50 dB-Hz)	≥ 50 dB-Hz @ -119 dBm

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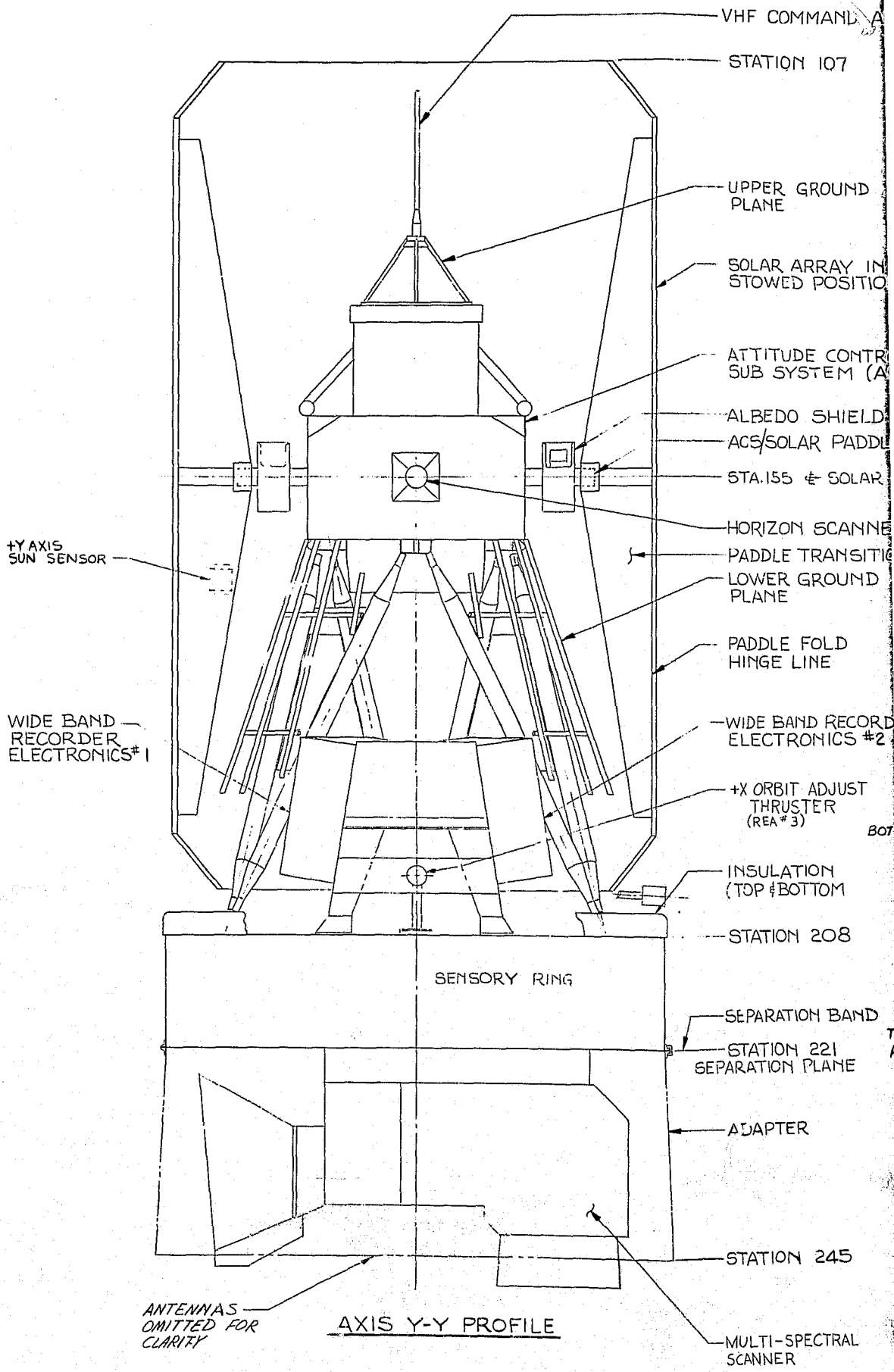

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VHF COMMAND ANTENNA

STATION 107

UPPER GROUND PLANE

SOLAR ARRAY IN STOWED POSITION

ATTITUDE CONTROL SUB SYSTEM (ACS)

ALBEDO SHIELD

ACS/SOLAR PADDLE SUPPORT I/F

STA.155 ℄ SOLAR PADDLE SHAFT

HORIZON SCANNER

PADDLE TRANSITION SECTION

LOWER GROUND PLANE

PADDLE FOLD HINGE LINE

WIDE BAND RECORDER ELECTRONICS #2

+X ORBIT ADJUST THRUSTER (REA # 3)

INSULATION (TOP & BOTTOM)

STATION 208

SEPARATION BAND

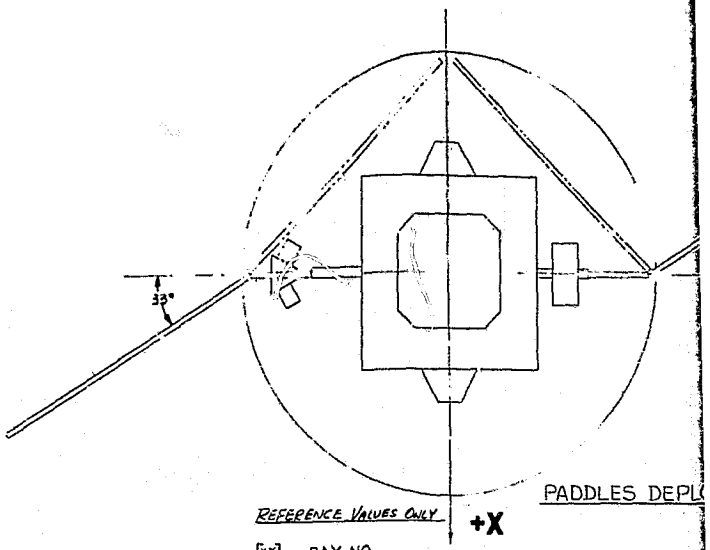
STATION 221 SEPARATION PLANE

ADAPTER

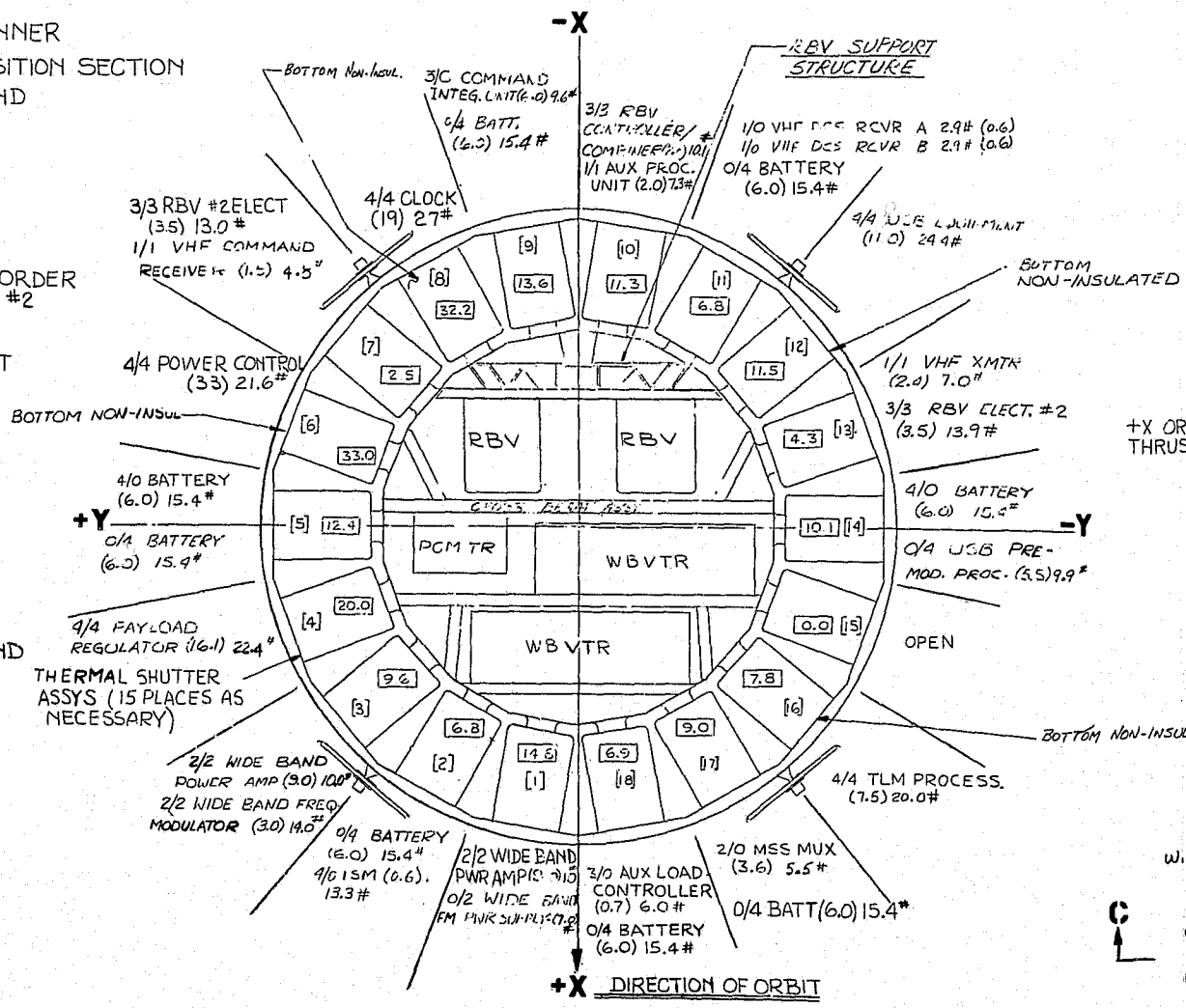
STATION 245

MULTI-SPECTRAL SCANNER

BAY NO	VOLUME USED	VOLUME UNUSED
1	2/4	2/0
2	2/4	
3	4/4	—
4	4/4	—
5	4/4	—
6	4/4	—
7	4/4	—
8	4/4	—
9	3/4	1/0
10	4/4	—
11	2/4	2/0
12	4/4	—
13	4/4	—
14	4/4	—
15	0/0	4/4
16	4/4	—
17	2/4	2/0
18	3/4	1/0



PADDLES DEPL



DIRECTION OF ORBIT

SECTION A-A

ROTATED 90° CCW.

STR

AUX

WIDE RECO ELEC OMIT CLA

+X ORBIT ADJUST THRUSTER (REA #3)

ECAM

W.B. ANTENNA MT

USB ANTENNA MT

USB ANTENNA

WB ANTENNA

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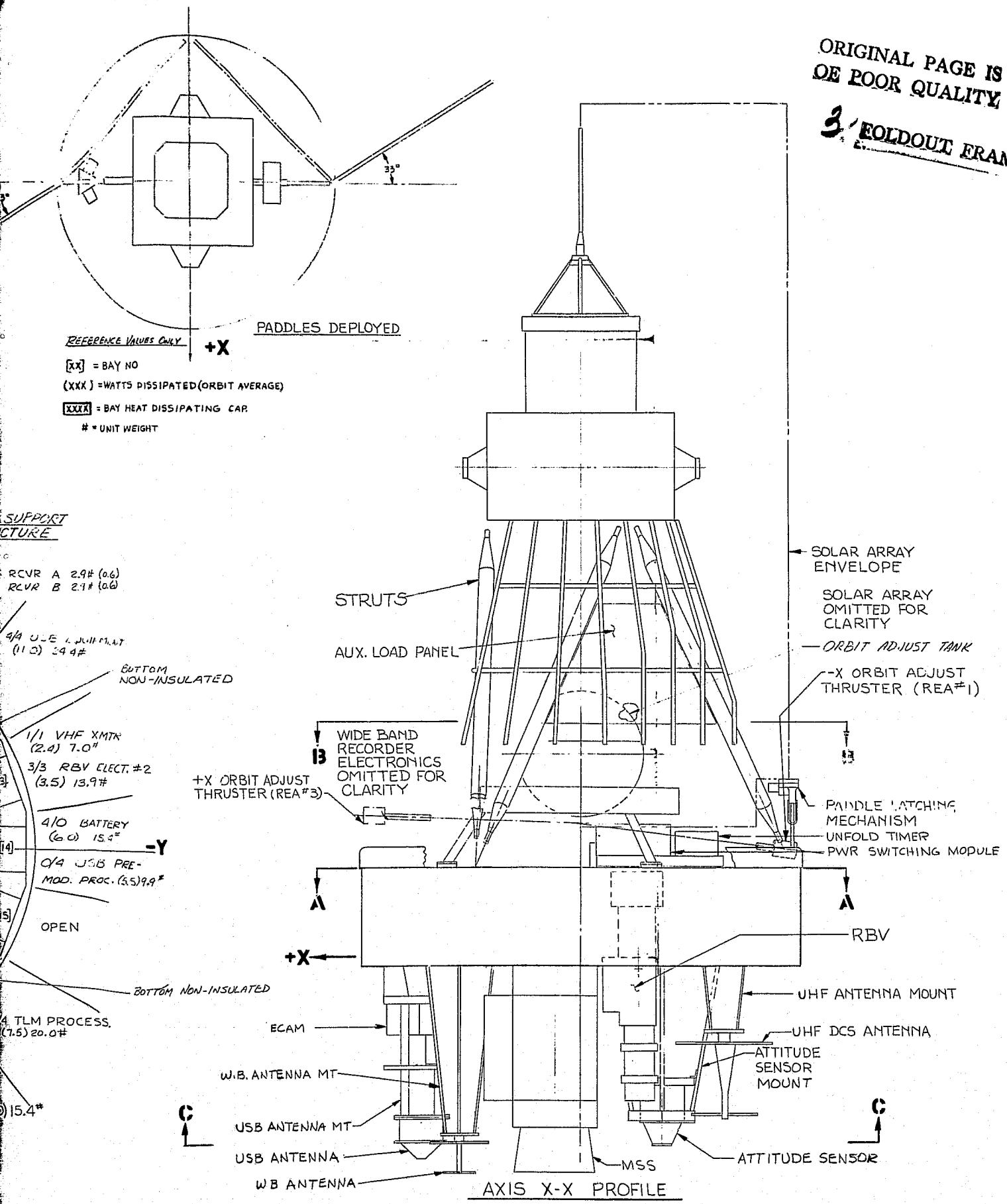
3 FOLDOUT FRAME



ERTS Configuration (1)

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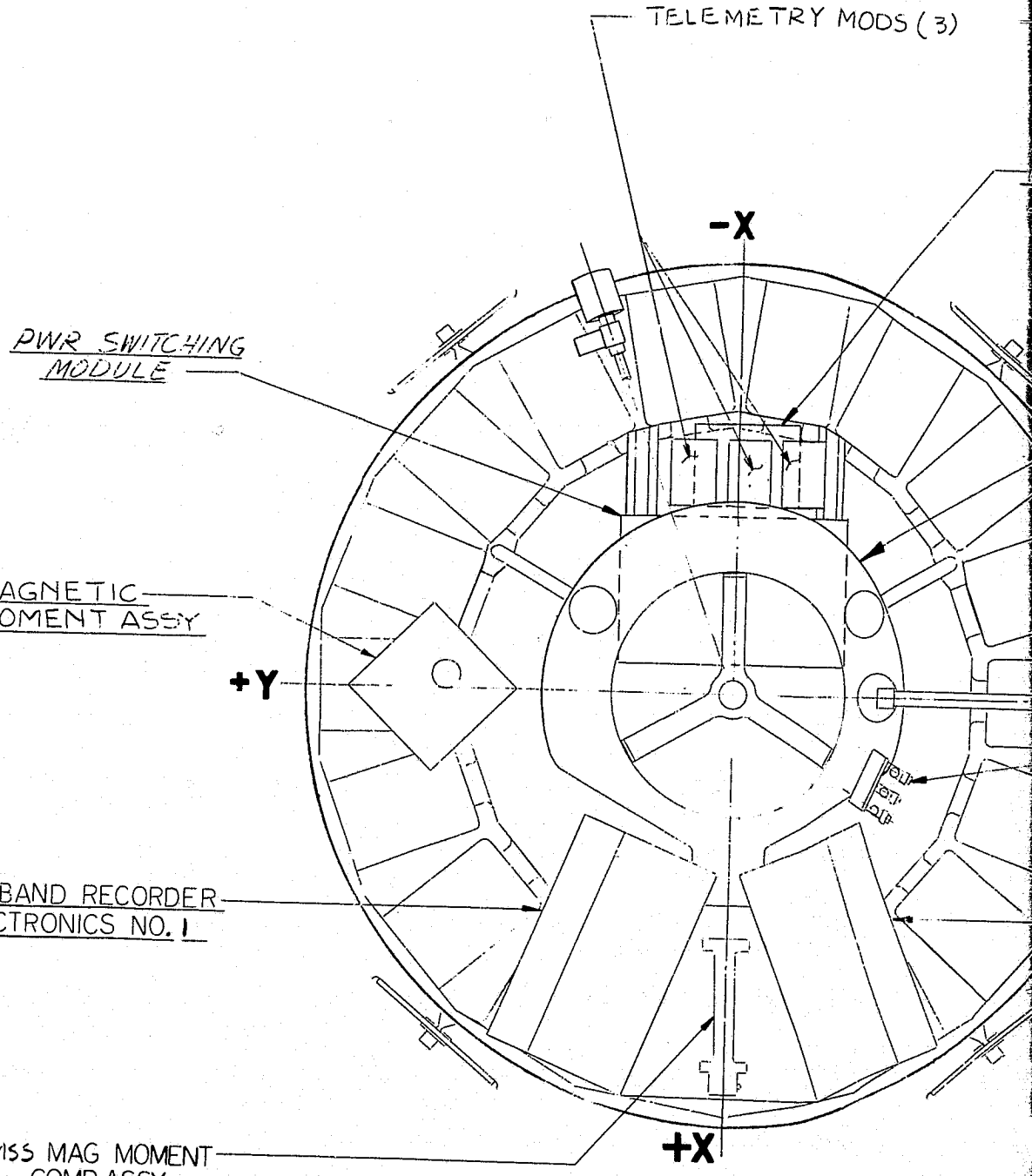

SECTION B-B (ROTATED 90°)

TOP SURFACE OF SENSORY RING

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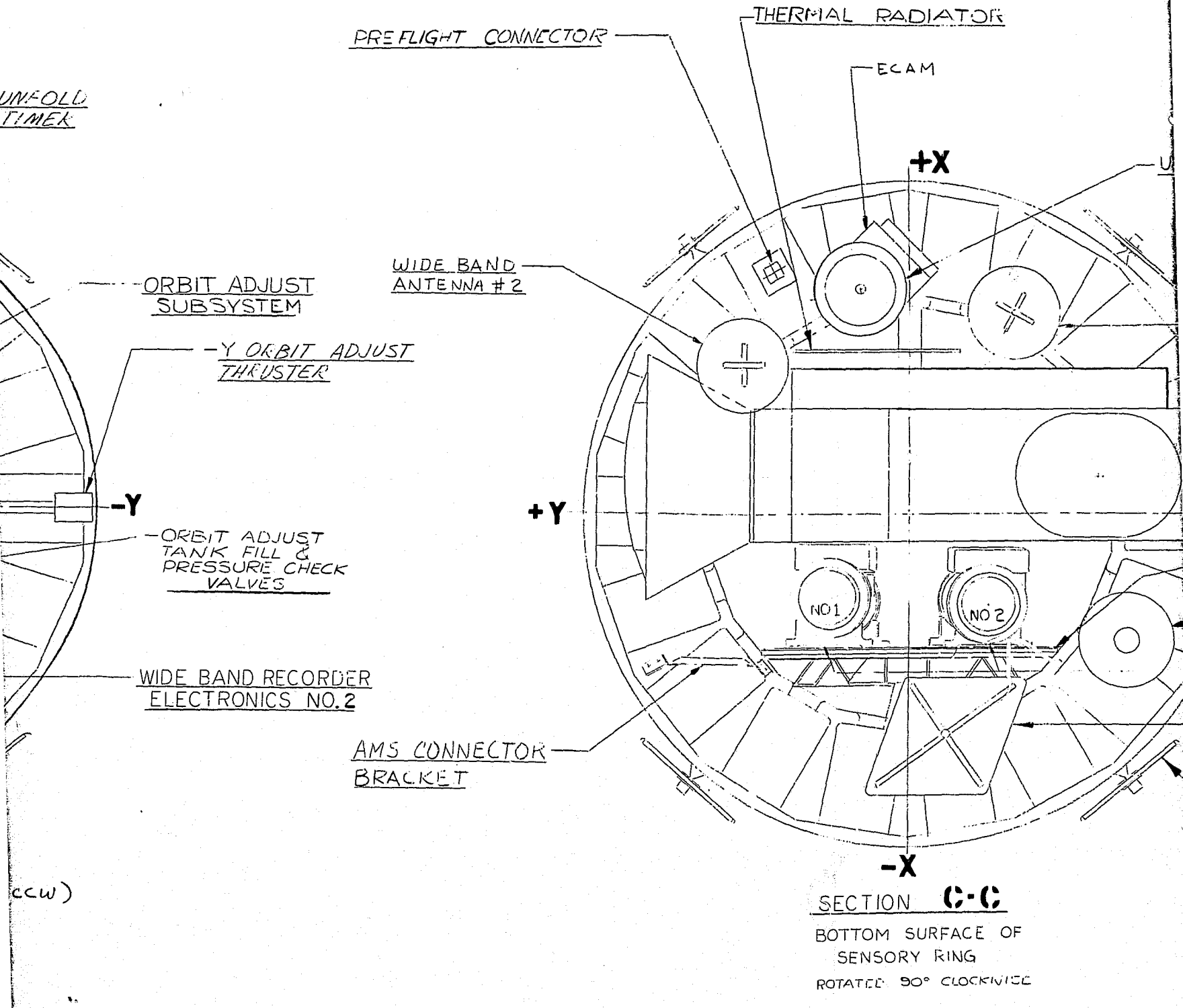

SECTION C-C

BOTTOM SURFACE OF
SENSORY RING

ROTATED 90° CLOCKWISE

FOLDOUT FRAME

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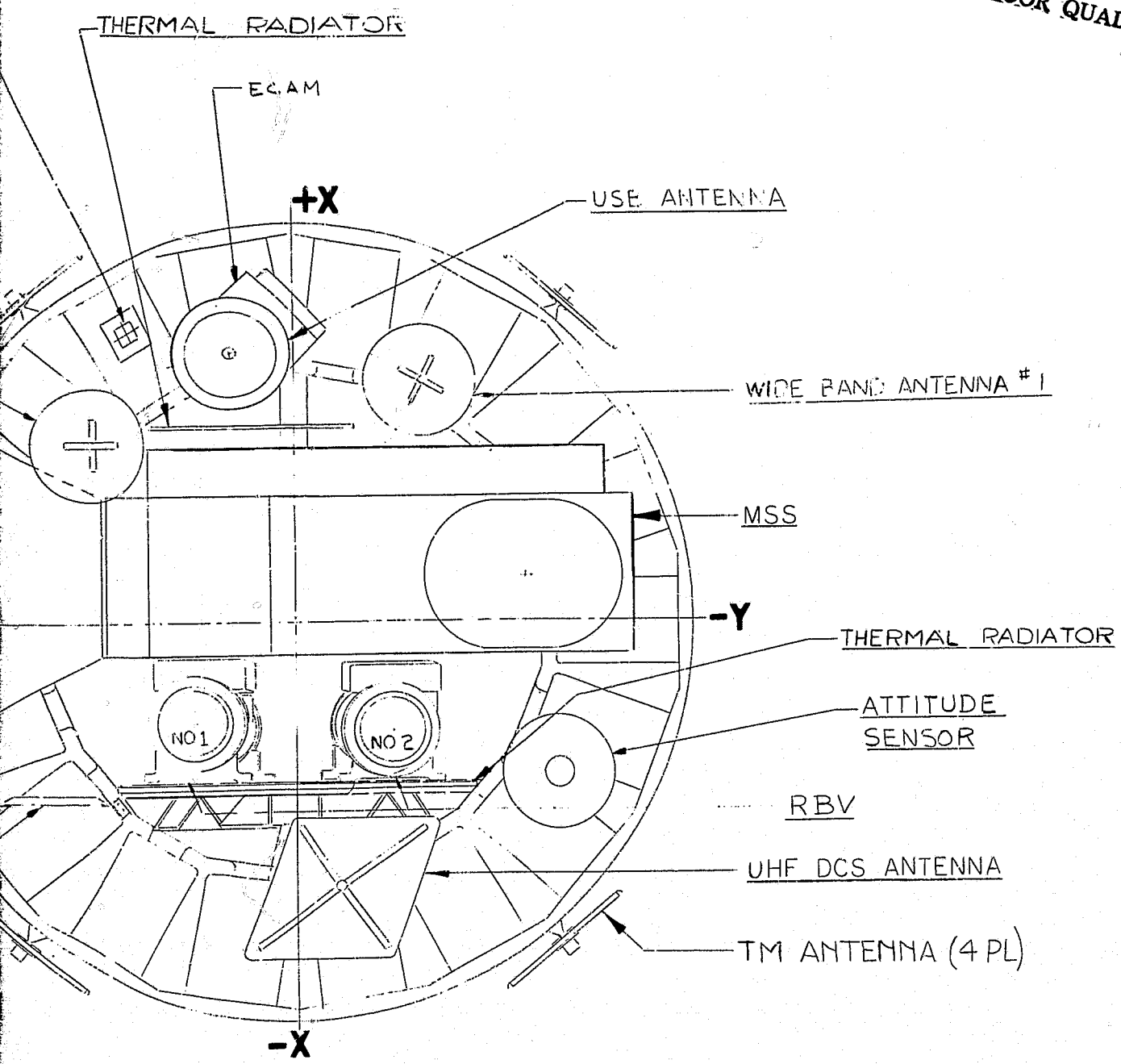

SECTION C-C

BOTTOM SURFACE OF SENSORY RING

ROTATED 90° CLOCKWISE

ERTS Configuration (2)

CONFIGURATION MANAGEMENT — SPACE SYSTEMS

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

Revision Status of Pages

SHEET #	INITIAL ISSUE	REV A	REV B	REV C	REV D	REV E	REV F	REV G
1(Index)	4/15/77	6/6/77						
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3	4/15/77							
4	4/15/77							
5	4/15/77		12/19/77					
6	4/15/77		12/19/77					
7	4/15/77							
8	4/15/77							
9	4/15/77							
10	4/15/77	6/6/77						
11	4/15/77	6/6/77						
12	4/15/77							
13	4/15/77	6/6/77						
14	4/15/77		12/19/77					
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16	4/15/77	6/6/77	12/19/77					
17	4/15/77	6/6/77	12/19/77					
18	4/15/77	6/6/77						
19	6/6/77		12/19/77					
20	6/6/77		12/19/77					
21	4/15/77	6/6/77						

Note 1. Those items which have been added or changed in this revision are noted with heavy black lines in the right margin.

2. Change-out log since December 1, 1976 appears on back of cover sheet

ISSUED BY CONFIGURATION MANAGEMENT OFFICE

DECEMBER 19, 1977

LANDSAT SPACECRAFT 905

CONFIGURATION CHANGES SINCE NOVEMBER 1, 1976

NOMENCLATURE	DRAWING NO.	REMOVED DATE	REMOVED S.N.	REPLACED DATE	REPLACED S.N.	COMMENTS
RRWS SIGNAL PROCESSOR #2	D40770G6	11/3/76	LSCFT19	11/16/76	LSCFT19	Returned to vendor, repair intermittent ground
RRWS SIGNAL PROCESSOR #1	D40770G5	11/9/76	LSCFT17	11/16/76	LSCFT17	Returned to vendor, repair intermittent ground
RATE MEASURING PACKAGE B	4310-90641-903	12/28/76	FT09	12/28/76	FT10	PD#621 Rundown time decreasing
COMMAND CLOCK	20001-102-401	12/28/76	NMG-FT1	12/28/76	F003	Removed for special test
COMMAND CLOCK	20001-102-401	1/29/77	F003	1/29/77	LSC-FT1	Rec'd flight clock from vendor
BATTERY #3	2265943-501	2/25/77	067	2/27/77	066	067 to be repaired at vendor
APU	47E221855G2	4/4/77	6549504	4/4/77	ENG.	MR#01380
WBVTR TRANSPORT #1	8358497-502	4/12/77	FT-1	4/12/77	LC-FT09	Rec'd flight transport from vendor
WBVTR ELECTRONICS #1	8370323-502	4/12/77	FT-1	4/12/77	LC-FT09	Rec'd flight electronics from vendor
APU	47E221855G2	4/19/77	ENG.	4/19/77	6549504	Completed repair per MR#01380
SOLAR ARRAY DRIVE	E246623-8	5/7/77	FT10	5/7/77	FT1	Return to vendor, replace cosine pot
SOLAR ARRAY DRIVE	E246623-8	5/27/77	FT1	5/27/77	FT10	Rec'd from vendor after rework
WBVTR TRANSPORT #2	8358497-502	5/27/77	FT-1	5/27/77	LC-FT10	Rec'd flight transport from vendor
WBVTR ELECTRONICS #2	8370323-502	5/27/77	FT-1	5/27/77	LC-FT10	Rec'd flight electronics from vendor
WBVTR ELECTRONICS #2	8370323-502	8/25/77	LC-FT10	8/29/77	LC-FT10	Returned to vendor for testing
WBVTR TRANSPORT #1	8358497-502	9/26/77	LC-FT09	12/3/77	LC-FT09	Returned to vendor for testing
WBVTR TRANSPORT #2	8358497-502	9/26/77	LC-FT10	10/31/77	LC-FT10	Returned to vendor for testing
WBVTR ELECTRONICS #1	8370323-502	9/26/77	LC-FT09	12/3/77	LC-FT09	Returned to vendor for testing and repair
WBVTR ELECTRONICS #2	8370323-502	9/19/77	LC-FT10	10/31/77	LC-FT10	Returned to vendor for testing

continued

		REMOVED		REPLACED		
		DATE	S.N.	DATE	S.N.	
WIDEBAND ANTENNA #2	47D222340G3	11/9/77	6549451	11/9/77	6627065	Replaced with G4 antenna
WBVTR ELECTRONICS #2	8370323-502	11/11/77	LC-FT10	12/6/77	LC-FT10	Returned to vendor for repair
MSS MULTIPLEXER	3241140-100	11/12/77	003	12/6/77	003	Returned to vendor for refurbishment
WIDEBAND ANTENNA #2	47D222340G4	11/15/77	6627065	12/14/77	6549451	Replaced with G5 Antenna
WIDEBAND ANTENNA #1	47D222340G3	11/21/77	6627063	12/14/77	6627063	Reworked to G5 Configuration

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

INDEX

CONSOLIDATED CONFIGURED ARTICLES LIST

EANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO	REV	SERIAL NO.
COMMAND INTEGRATION UNIT	GE-SS	47E221775G2	AN-5	6549448
Chassis Assy. A1	GE-SS	47D221813G3	AN-3	PP908
Cordwood Module A3	GE-SS	47D221797G1	AN-4	PP789
Cordwood Module A5	GE-SS	47D221798G1	AN-5	PQ677
Cordwood Module A6	GE-SS	47D221796G1	AN-4	PR481
Cordwood Module A7	GE-SS	47D221799G1	AN-4	PP246
Cordwood Module A8	GE-SS	47E221800G1	AN-3	PP247
Stick Module A9	GE-SS	47E221801G1	None	PP233
Stick Module A12	GE-SS	47E221804G1	AN-1	PP232
Stick Module A13	GE-SS	47E235723G1	None	JD425
Stick Module A14	GE-SS	47E221806G1	AN-2	PP230
Stick Module A15	GE-SS	47E233887G1	AN-1	JD669
Cordwood Module A16	GE-SS	47E221852G1	AN-2	PR897
Stick Module A17	GE-SS	47E221853G1	AN-3	PP228
Cordwood Module A18	GE-SS	47D221851G1	AN-5	PP813
Chassis Assy. A2	GE-SS	47D221813G4	AN-3	JD665
Cordwood Module A3	GE-SS	47D221797G1	AN-5	JF769
Cordwood Module A5	GE-SS	47D221798G1	AN-6	JF466
Cordwood Module A6	GE-SS	47D221796G1	AN-5	JF767
Cordwood Module A7	GE-SS	47D221799G1	AN-4	PP245
Cordwood Module A8	GE-SS	47E221800G1	AN-3	PP242
Stick Module A9	GE-SS	47E221801G1	None	PP215
Stick Module A12	GE-SS	47E221804G1	AN-1	PP411
Stick Module A13	GE-SS	47E235722G1	None	JD426
Stick Module A14	GE-SS	47E221806G1	AN-2	PP409
Stick Module A15	GE-SS	47E233887G1	AN-1	JD670
Cordwood Module A16	GE-SS	47E221852G1	AN-2	PP816
Stick Module A17	GE-SS	47E221853G1	AN-3	PP241
Cordwood Module A18	GE-SS	47D221851G1	AN-6	JF927
Chassis Assy. A3	GE-SS	47D221811G2	AN-4	JD662
P.C. Bd. Assy A1	GE-SS	47D221918G1	AN-5	PP606
Rect. & Filter Module A2	GE-SS	47D221793G1	None	PP237
P.C. Bd. Assy A3	GE-SS	47D221919G1	AN-6	PP605
Rect. & Filter Module A4	GE-SS	47D221793G1	None	PP414
SEP. & UNFOLD TIMER	GE-SS	47E210587G3	AN-6	6627054
Comp. Assy. A1	GE-SS	47E210585G2	AN-14	JA333
AUX LOAD PANEL #1	GE-SS	47E210850G5	AN-12	6627053
AUX LOAD PANEL #2	GE-SS	47E210850G5	AN-12	6627052
TELEMETRY CONVERSION MODULE #1	GE-SS	47E207682G3	AN-18	6627040
TELEMETRY CONVERSION MODULE #2	GE-SS	47E207682G3	AN-18	6627042
TELEMETRY CONVERSION MODULE #3	GE-SS	47E207682G3	AN-18	6627041
UNFOLD SWITCH		133B1943P2	AN-5	301

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
AUX PROCESSING UNIT	GE-SS	47E221855G2	AN-14	6549504
Housing Assy. 1	GE-SS	47E221899G1	AN-5	TY804
IC Chassis Assy. 2	GE-SS	47E221884G1	AN-2	PR068
Module A1	GE-SS	47E221861G1	AN-3	PQ420
Module A2	GE-SS	47E221862G1	AN-2	PQ427
Module A3	GE-SS	47E221861G1	AN-3	PQ424
Module A4	GE-SS	47E221862G1	AN-1	PQ425
Module A5	GE-SS	47E221867G1	AN-3	PQ994
Module A6	GE-SS	47E221868G1	AN-6	PQ421
Module A7	GE-SS	47E221868G1	AN-6	PQ341
Module A8	GE-SS	47E221865G1	AN-2	PQ419
Module A9	GE-SS	47E221866G1	AN-2	PQ482
Module A10	GE-SS	47E221863G1	AN-1	PQ343
Module A11	GE-SS	47E221864G1	AN-3	PQ423
Module A12	GE-SS	47E221869G1	AN-2	PQ426
Module A13	GE-SS	47E221870G1	AN-1	PQ342
Module A14	GE-SS	47E221871G1	AN-2	PQ428
Module A15	GE-SS	47E221872G1	AN-1	PQ384
Module A16	GE-SS	47E221873G1	AN-2	PQ430
Module A17	GE-SS	47E221874G1	AN-1	PQ418
Module A18	GE-SS	47D221875G1	None	PQ207
Module A19	GE-SS	47D221881G1	AN-6	PQ680
Module A20	GE-SS	47D221875G1	None	PQ206
Module A21	GE-SS	47D221881G1	AN-6	PQ682
Module A22	GE-SS	47D221882G1	AN-2	PQ669
Module A23	GE-SS	47D221880G1	None	PP413
Module A24	GE-SS	47D221875G1	None	PQ208
Module A25	GE-SS	47D221881G1	None	PQ681
Module A26	GE-SS	47D221876G1	None	PQ664
PC Bd. Assy. A27	GE-SS	47D221894G1	None	PQ377
PC Bd. Assy. A28	GE-SS	47D221897G1	AN-1	PQ379
Module A29	GE-SS	47D221906G1	AN-2	PP888
WB FREQ. MOD. ASSY.	GE-SS	47E221815G1	AN-9	6549507
PW Board Assy. A1	GE-SS	47E221832G1	AN-6	PQ443
PW Board Assy. A2	GE-SS	47E221832G1	AN-6	PQ442
PW Board Assy. A3	GE-SS	47D221830G1	AN-2	PQ832
PW Board Assy. A4	GE-SS	47D221834G1	AN-4	PQ359
PW Board Assy. A5	GE-SS	47E221826G1	AN-5	PQ851
PW Board Assy. A6	GE-SS	47E221828G1	AN-4	PQ891
PW Board Assy. A7	GE-SS	47E221830G1	AN-2	PQ831
PW Board Assy. A8	GE-SS	47D221836G1	AN-7	PQ885
PW Board Assy. A9	GE-SS	47D221836G1	AN-7	PQ884
Ref. Osc. X4 Mult. A11	GE-SS	47E223316G1	AN-2	PQ650
Volt Reg/VCO A15	GE-SS	47E223311G1	AN-7	PQ463
Volt Reg/VCO A16	GE-SS	47E223311G1	AN-7	PQ464
Volt Reg/VCO A17	GE-SS	47E223311G2	AN-7	PQ465
Volt Reg/VCO A18	GE-SS	47E223311G2	AN-7	PQ466
Diode Module A19	GE-SS	47E223380G1	AN-1	PQ703
Stripline	GE-RESD	47D178444G1	NONE	VF450
Dis. If. Lim. A12	GE-RESD	47C148186P1	Rev C	MY58543

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
TEMPERATURE CONTROLLER -BAY 1	GE-SS	47E213640G5	AN-12	6549675
Bellows	Flexonics	47C213633P1	AN-2	FX14-75-516
TEMPERATURE CONTROLLER -BAY 2	GE-SS	47E213640G5	AN-12	6549679
Bellows	Flexonics	47C213633P1	AN-2	FX566-A75
TEMPERATURE CONTROLLER -BAY 3	GE-SS	47E213640G5	AN-12	6549686
Bellows	Flexonics	47C213633P1	AN-2	FX566-A47
TEMPERATURE CONTROLLER -BAY 4	GE-SS	47E213640G5	AN-12	6549681
Bellows	Flexonics	47C213633P1	AN-2	FX566-A80
TEMPERATURE CONTROLLER -BAY 5	GE-SS	47E213640G5	AN-12	6549569
Bellows	Flexonics	47C213633P1	AN-2	FX566-A94
TEMPERATURE CONTROLLER -BAY 7	GE-SS	47E213640G5	AN-12	6549680
Bellows	Flexonics	47C213633P1	AN-2	FX14-75-513
TEMPERATURE CONTROLLER -BAY 9	GE-SS	47E213640G5	AN-12	6549687
Bellows	Flexonics	47C213633P1	AN-2	FX566-A40
TEMPERATURE CONTROLLER -BAY 10	GE-SS	47E213640G5	AN-12	6549676
Bellows	Flexonics	47C213633P1	AN-2	FX566-A53
TEMPERATURE CONTROLLER -BAY 11	GE-SS	47E213640G5	AN-12	6549677
Bellows	Flexonics	47C213633P1	AN-2	FX566-A63
TEMPERATURE CONTROLLER -BAY 12	GE-SS	47E213640G5	AN-12	6549678
Bellows	Flexonics	47C213633P1	AN-2	FX566-A56
TEMPERATURE CONTROLLER -BAY 13	GE-SS	47E213640G5	AN-12	6549684
Bellows	Flexonics	47C213633P1	AN-2	FX566-A15
TEMPERATURE CONTROLLER -BAY 14	GE-SS	47E213640G5	AN-12	6549572
Bellows	Flexonics	47C213633P1	AN-2	FX566-A85
TEMPERATURE CONTROLLER -BAY 16	GE-SS	47E213640G5	AN-12	6549674
Bellows	Flexonics	47E213633P1	AN-2	FX566-A54
TEMPERATURE CONTROLLER -BAY 17	GE-SS	47E213640G5	AN-12	6549682
Bellows	Flexonics	47C213633P1	AN-2	FX566-A60
TEMPERATURE CONTROLLER -BAY 18	GE-SS	47E213640G5	AN-12	6549685
Bellows	Flexonics	47C213633P1	AN-2	FX566-A30

LANDSAT SPACECRAFT 905

NOMENCLATURE		SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
WBFM POWER SUPPLY		GE-SS	47E223321G1	AN-11	6549510
Post Reg. Assy.		GE-SS	47D223325G1	AN-5	PQ440
XSTR Brkt. Assy.		GE-SS	47B223342G2	AN-8	PQ612
Pwr. Trans. Assy.		GE-SS	47D223356G1	AN-1	PQ447
Pwr. Trans. Assy.		GE-SS	47D223356G1	AN-1	PQ448
Conv. Assy.	A1	GE-SS	47D223305G1	AN-5	PQ961
Conv. Assy.	A3	GE-SS	47D223305G2	AN-5	PQ960
Cap Module	A5	GE-SS	47E223309G1	None	PQ086
Diode Module	A6	GE-SS	47D223310G1	AN-1	PQ087
Rect. Assy.	A7	GE-SS	47C223324G1	AN-2	PR043
Rect. Assy.	A8	GE-SS	47C223324G1	AN-2	PR088
Diode Assy.	A9	GE-SS	47C223349G1	None	PR064
POWER SWITCHING MODULE		GE-SS	47E221925G2	AN-11	6549499
Relay Assy.	A1	GE-SS	47D221956G1	AN-1	PP786
Relay Assy.	A2	GE-SS	47D221956G1	AN-1	PP784
Relay Assy.	A3	GE-SS	47D221956G1	AN-1	PP785
Relay Assy.	A4	GE-SS	47D221956G1	AN-1	PP780
Relay Assy.	A5	GE-SS	47D221956G1	AN-1	PP787
Telem. Resistor Assy.	A6	GE-SS	47D221954G1	AN-3	PP782
Diode Assy.	A7	GE-SS	47D221955G1	AN-2	PP783
Fuse Assy.	A8	GE-SS	47D221953G1	AN-2	PP806
Fuse Assy.	A9	GE-SS	47D221953G2	AN-2	PP805
Relay Bd. Assy.	A10	GE-SS	47D221886G1	AN-2	PP933
Relay Panel, Top	A11	GE-SS	47D221969G2	AN-4	PP876
Relay Panel, Bot.	A12	GE-SS	47D221970G2	AN-5	PP867
COMMAND RECEIVER		RCA	2271145-501	M	EAB PR1
A4 Receiver Assembly		RCA	2270108-501	E	001
A1 IF Amp. Board		RCA	1723546-503	L	101
A2 IF Amp. Board		RCA	1723546-503	L	102
A3 Osc. & RF Amp. Board		RCA	1843178-503	D	101
A4 Osc. & RF Amp. Board		RCA	1843178-503	D	104
Demodulator Comp.		RCA	2271154-501	H	002
Demodulator Comp.		RCA	2271154-501	H	003
Regulator & Telemetry		RCA	2271153-501	F	001
Antenna Coupler		RCA	2262728-501	B	007
Diode Board Assembly		RCA	1974688-501	A	001
Comp. Board Assembly		RCA	2262746-501	E	002
RBV MMCA		GE-SS	47D224600G1	AN-3	6627121
Coil Housing		GE-SS	47D224605G1	AN-1	JB396
Panel Assembly		GE-SS	47C224608G1	AN-5	JB867
Coil Assembly		GE-SS	47C224602G1	AN-2	JB612

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO	REV	SERIAL NO.
DCS RECEIVER "A"	Radiation	613310G1	C	FLT-1
Preselector Assembly	Radiation	529220G1	A	0001
Second IF	Radiation	124226G1	C	0001
Limiter	Radiation	124227G1	A	0001
Relay	Radiation	124228G1	A	0007
First IF	Radiation	124229G1	C	0001
R.F. Amplifier	Radiation	124230G1	B	0007
Power Supply	Radiation	124231G1	A	0001
Osc. & X6 VHF Receiver	Radiation	124232G1	A	0001
First Doubler	Radiation	124233G1	A	0002
Second Doubler	Radiation	124234G1	A	0003
Buffer Amplifier	Radiation	124609G1	A	0001
DCS RECEIVER "B"	GE-SS	47C233903G1	None	6627058
Preselector Assembly	GE-SS	47D233904G1	AN-4	JB250
Second IF	GE-SS	124226G1	AN-2	JA505
Limiter	GE-SS	47C233906G1	None	JC030
Relay	GE-SS	124228G1	AN-2	JA342
First IF	GE-SS	47C233908G1	AN-1	JA406
R.F. Amplifier	GE-SS	47C233909G1	AN-1	JC028
Power Supply	GE-SS	124231G1	AN-1	JA343
Osc. & X6 VHF Receiver	GE-SS	124232G1	AN-1	JA341
First Doubler	GE-SS	124233G1	AN-2	JA340
Second Doubler	GE-SS	47C233907G1	None	JC029
Buffer Amplifier	GE-SS	124609G1	AN-3	JA344
PREMOD. PROCESSOR	SCI	2600000-1	A	EAB-QM1
Electronics Assy.	SCI	2600060-1	A	001
PCB Assy., Pwr. Filter	SCI	2600037-1	A	004
PCB Assy., Pwr. Supply	SCI	2600049-1	A	005
PCB Assy., Pwr. Supply	SCI	2600049-1	A	003
PCB Assy., Sec. Sw.	SCI	2600068-1	B	004
PCB Assy., Tape Rec. Sw.	SCI	2600043-1	A	001
PCB Assy., 597KHZ Mod.	SCI	2600031-1	A	001
PCB Assy., 768KHZ Mod.	SCI	2600034-1	B	002
PCB Assy., CSSN	SCI	2600046-1	A	002
PCB Assy., Discriminator	SCI	2600040-1	A	003
PCB Assy., Discriminator	SCI	2600040-1	A	001
AUX LOAD CONTROLLER	GE-SS	47E210783G7	AN-15	6627068
Relay Panel A1	GE-SS	47E233912G1	AN-1	JC801
Relay Panel A2	GE-SS	47E233913G1	AN-2	JC802
ADAPTER	GE-SS	47J213521G1	AN-2	011
PREFLIGHT DISCONNECT	Kinetics	47E211225P2	None	0009
SEPARATION SWITCHES (ADAPTER)	MINN.-H	133B1902P2	AN-6	000210/ 000211
SEPARATION SWITCHES (SPACECRAFT)	MINN.-H	133B1902P2	AN-6	000208/ 000209

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
Unified S-Band Equipment	Motorola	01-P09566C001	D	EAB-FT1
Frequency Multiplier 1A7		01-P09568C001	C	A104
Frequency Multiplier 1A17		01-P09568C001	C	A103
Wide Band Detector 1A4		01-P09570C001	D	A103
Limiter Amplifier AR001		01-P09627C001	none	A103
Limiter Amplifier AR002		01-P09627C001	none	A107
Limiter Amplifier AR003		01-P09627C001	none	A108
Limiter Amplifier AR006		01-P09627C001	none	A112
Divider 19-9.5MC A002		01-P09632C001	A	A103
Buffer Amplif. 9.5MC AR005		01-P09635C001	none	A103
Signal Driver A001		01-P09644C001	B	A104
Ref Driver A003		01-P09646C001	B	A103
Subcarrier Amp. AR007		01-P09648C001	none	A103
Ranging Ampl. AR004		01-P09650C001	A	A103
Wide Band Detector 1A14		01-P09570C001	D	A104
Limiter Amp. AR001		01-P09627C001	none	A114
Limiter Amp. AR002		01-P09627C001	none	A113
Limiter Amp. AR003		01-P09627C001	none	A116
Limiter Amp. AR006		01-P09627C001	none	A117
Divider 19-9.5MC A002		01-P09632C001	none	A104
Buffer Amp. 9.5MC AR005		01-P09635C001	none	A104
Signal Driver A001		01-P09644C001	B	A106
Ref. Driver A003		01-P09646C001	B	A104
Subcarrier Amp. AR007		01-P09648C001	none	A104
Ranging Amp. AR004		01-P09650C001	A	A105
Auxiliary Osc. PM 1A9		01-P09553C001	H	A103
Switching Network A001		01-P09557C001	none	A104
Auxiliary Osc. PM 1A19		01-P09553C001	H	A104
Switching Network A001		01-P09557C001	none	A102
Voltage Control Osc. 1A8		01-P09548C001	F	A103
Voltage Control Osc 1A18		01-P09548C001	F	A105
Narrow Band Detector 1A2		01-P09544C001	E	A103
Narrow Band Detector 1A12		01-P09544C001	E	A104
IF Amplifier Mixer 1A1		01-P09540C001	D	A103
IF Amplifier Mixer 1A11		01-P09540C001	D	A104
RF Converter 1A3		01-P09572C001	E	A103
RF Converter 1A13		01-P09572C001	E	A106
Pow. Amp/X30 Mult PM 1A10		01-P09585C001	H	A104
Helical Resonator A002		01-P09658C001	none	A104
Filter-Power Amp. A001		01-P09711C001	none	A104
Freq. Mult X3		01-P09714C001	A	A104
S Band Power Amp.		01-P09589C001	F	A102
Pow. Amp/X30 Mult FM 1A20		01-P09585C001	H	A103
Helical Resonator A002		01-P09658C001	none	A103
Filter-Power Amp. A001		01-P09711C001	none	A103
Freq. Mult X3		01-P09714C001	A	A103
S Band Power Amp		01-P09589C001	F	A105
Diplexer 1A21		01-P09602C001	D	A103
Power Converter XMTR 1A5		01-P09577C001	G	A103
Regulator A001		01-P09689C001	C	A107

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
Unified S-Band Equip. (Cont.)	Motorola			EAB-FT1 (continued)
Power Converter XMTR 1A15		01-P09577C001	G	A106
Regulator A001		01-P09689C001	C	A105
Power Converter RCVR 1A6		01-P09740C001	G	A103
Regulator A001		01-P09689C001	C	A108
Power Converter RCVR 1A16		01-P09740C001	G	A104
Regulator A001		01-P09689C001	C	A114
Connector/EMI Box 1A22		01-P09604C001	G	A103
Cable Assembly W1		30-P02306D001	D	A102
Cable Assembly W2		30-P02306D002	D	A102
Cable Assembly W3		30-P02306D003	D	A102
Cable Assembly W4		30-P02306D004	D	A102
Cable Assembly W5		30-P02306D005	D	A102
Cable Assembly W6		30-P02306D006	D	A102
Cable Assembly W7		30-P02306D007	D	A102
Cable Assembly W8		30-P02306D008	D	A102
Cable Assembly W9		30-P02306D009	D	A102
Cable Assembly W10		30-P02306D010	D	A102
Cable Assembly W11		30-P02306D011	D	A102
Cable Assembly W12		30-P02306D012	D	A102
Cable Assembly W13		30-P02306D013	D	A102
Cable Assembly W14		30-P02306D014	D	A102
Cable Assembly W15		30-P02306D015	D	A102
Cable Assembly W16		30-P02306D016	D	A103
Cable Assembly W17		30-P02306D017	D	A103
Cable Assembly W18		30-P02306D018	D	A102
Cable Assembly W19		30-P02306D019	D	A102
Cable Assembly W20		30-P02306D020	D	A102
Cable Assembly W21		30-P02306D021	D	A102
Cable Assembly W22		30-P02306D022	D	A102
Cable Assembly W23		30-P02306D023	D	A102
Cable Assembly W24		30-P02306D024	D	A102
Cable Assembly W25		30-P02319D001		A103
Cable Assembly W26		30-P02307D001	B	A102
Cable Assembly W27		30-P02307D002	B	A102
Cable Assembly W28		30-P02318D001	C	A102
Cable Assembly W29		30-P02317D001	B	A102
Cable Assembly W30		30-P02320D001	C	A101
Cable Assembly W31		30-P02321D001	B	A102
Cable Assembly W32		30-P02306D025	D	A102
Cable Assembly W33		30-P02306D026	D	A102
Wide band Filter #1	Peninsula	Model F1522B	None	7
Wide band Filter #2	Peninsula	Model F1522B	None	5

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
POWER SUBSYSTEM				
CONTROL MODULE	RCA	1759712-502	AR	015
A-1 Fuse Board Assy.	RCA	1759561-501	G	101
A-2 Fuse Board Assy.	RCA	1759561-502	G	101
A-3 C.F. Regulator Board	RCA	1759567-501	C	101
A-4 C.F. Regulator Board	RCA	1759567-501	C	102
A-5 Regulated Buss	RCA	1759570-501	E	101
A-6 Aux. Reg. & Trickle	RCA	1759569-501	C	101
A-7 Shunt Dis. Dr. Telem.	RCA	1759577-501	F	101
A-8 Current, Sens. & Telem.	RCA	1759582-501	D	101
A-9 Harness Assy.	RCA	1849873-501	F	101
A-10 Sw. Bd. Assy.	RCA	1966502-501	C	101
A-11 Diode & Fil. Bd. Assy.	RCA	1966505-501	C	101
A-12 Filter Board Assy.	RCA	1965840-501	None	101
A-13 Cap. Assy.	RCA	1768958-501	B	101
A-14 Cap. Assy.	RCA	1768957-501	B	101
A-15 Heat Sink Assy.	RCA	1849560-501	E	101
A-16 Bracket Heat Sink Assy	RCA	1768982-501	E	101
A-17 Filter Assy.	RCA	2263400-501	H	101
PAYLOAD REGULATOR MODULE	RCA	1759712-503	AK	013
A-1 Fuse Board Assy.	RCA	1759561-501	G	021
A-2 Fuse Board Assy.	RCA	1759561-502	G	023
A-3 C.F. Regulator Board	RCA	1759567-501	B	023
A-4 C.F. Regulator Board	RCA	1759567-501	B	024
A-5 Regulated Buss	RCA	1759570-501	E	018
A-6 Aux. Reg. & Trickle	RCA	1759569-501	C	018
A-7 Shunt Dis. Dr. Telem.	RCA	1759577-501	F	017
A-8 Current, Sens. & Telem.	RCA	1759582-501	D	017
A-9 Harness Assy.	RCA	1849873-501	F	017
A-10 Sw. Bd. Assy.	RCA	1966502-501	C	018
A-11 Diode & Fil. Bd. Assy.	RCA	1966505-501	C	018
A-12 Filter Board Assy.	RCA	1965840-500	None	017
A-13 Cap. Assy.	RCA	1768958-501	B	020
A-14 Cap. Assy.	RCA	1768757-501	B	018
A-15 Heat Sink Assy.	RCA	1849560-501	D	018
A-16 Bracket Heat Sink Assy.	RCA	1768982-501	C	018
A-17 Filter Assy.	RCA	2263400-501	H	017
Inductor Assy.	RCA	1768483-501	E	017
Inductor Assy.	RCA	1768941-501	C	017
SOLAR PLATFORM & ARRAY RH	Spectrolab	022874-501	B	501
Main Solar Panel		022455-501	B-2	501
Transition Array		022456-501	C-2	501
SOLAR PLATFORM & ARRAY LH	Spectrolab	022875-502	B	502
Main Solar Panel		022457-502	B-2	502
Transition Array		022458-502	B-2	502

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO	REV	SERIAL NO.
BATTERY MODULE ASSY	RCA	2265943-501	L	070
Electronic Bd.	RCA	1759578-502	J	106
Electronic Bd.	RCA	1849843-502	G	106
Relay & Harness, Bkt. Assy	RCA	1849822-502	F	106
Heat Sink, Wiring Assy.	RCA	1849598-502	G	106
Heat Sink Assy.	RCA	1849596-502	E	106
BATTERY MODULE ASSY.	RCA	2265943-501	L	065
Electronic Bd.	RCA	1759578-502	J	101
Electronic Bd.	RCA	1849843-502	G	101
Relay & Harness, Bkt. Assy	RCA	1849822-502	F	101
Heat Sink, Wiring Assy.	RCA	1849598-502	G	101
Heat Sink Assy.	RCA	1849596-502	E	101
BATTERY MODULE ASSY	RCA	2265943-501	L	066
Electronic Bd.	RCA	1759578-502	J	102
Electronic Bd.	RCA	1849843-502	G	102
Relay & Harness, Bkt. Assy.	RCA	1849822-502	F	102
Heat Sink, Wiring Assy.	RCA	1849598-502	G	102
Heat Sink Assy.	RCA	1849596-502	E	102
BATTERY MODULE ASSY.	RCA	2265943-501	L	032R
Electronic Bd.	RCA	1759578-502	J	032
Electronic Bd.	RCA	1849843-502	G	032
Relay & Harness, Bkt. Assy.	RCA	1849822-502	F	057
Heat Sink, Wiring Assy.	RCA	1849598-502	G	032
Heat Sink Assy.	RCA	1849596-502	E	032
BATTERY MODULE ASSY.	RCA	2265943-501	L	069
Electronic Bd.	RCA	1759578-502	J	105
Electronic Bd.	RCA	1849843-502	G	105
Relay & Harness, Bkt. Assy.	RCA	1849822-502	F	105
Heat Sink, Wiring Assy.	RCA	1849598-502	G	105
Heat Sink Assy.	RCA	1849596-502	E	105
BATTERY MODULE ASSY.	RCA	2265943-501	L	068
Electronic Bd.	RCA	1759578-502	J	104
Electronic Bd.	RCA	1849843-502	G	104
Relay & Harness, Bkt. Assy.	RCA	1849822-502	F	104
Heat Sink, Wiring Assy.	RCA	1849598-502	G	104
Heat Sink Assy.	RCA	1849596-502	E	104
BATTERY MODULE ASSY.	RCA	2265943-501	L	047R
Electronic Bd.	RCA	1759578-502	J	043
Electronic Bd.	RCA	1849843-502	G	043
Relay & Harness, Bkt. Assy.	RCA	1849822-502	F	048
Heat Sink, Wiring Assy.	RCA	1849598-502	G	040
Heat Sink Assy.	RCA	1849596-502	E	040
BATTERY MODULE ASSY.	RCA	2265943-501	L	028R
Electronic Bd.	RCA	1759578-502	J	031
Electronic Bd.	RCA	1849843-502	G	031
Relay & Harness, Bkt. Assy.	RCA	1849822-502	F	028
Heat Sink, Wiring Assy.	RCA	1849598-502	G	028
Heat Sink Assy.	RCA	1849596-502	E	028

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
MMCA	Ithaco	D40634-G5	E	LSCFT6
R-Magnet Assy.		D40911-G3	D	21387
Sensor Assy.		D40997-G1	A	21383
Y-Magnet Assy.		D40911-G3	D	21386
Sensor Assy.		D40997-G1	A	21382
P-Magnet Assy.		D40911-G3	D	21385
Sensor Assy.		D40997-G1	A	21384
A1 P.C. Assy.		D40614-G1	A	21346
A2 P.C. Assy.		D40615-G1	A	21347
Orbit Adjust Subsystem	Rkt.Rsrch.	26058-9	D	EAB-FT2
Thruster Assembly		25111-49	L	321
Thruster Assembly		25111-49	L	314
Thruster Assembly		25111-59	L	303
Trans. Box & Connector		24949-5	F	102
Attitude Measurement Sensor	Quantic	51877-01	D	004
IR Telescope Assy.		51788-01	G	004
Housing Assembly		51903-01	E	004
Objective Lens Assy.		51791-01	C	001
Filter Assembly		51797-01	A	001
Heat Sink Assembly		51807-01	C	001
Chopper Board Assy.		51878-01	E	004
Signal Board - Lower		51849-01	B	003
Signal Board - Upper		51853-01	B	003
Signal Board Assembly		51909-01	C	003
Connector Assembly		51907-01	C	003
DC-DC Conv. Bd. Assy.		51873-01	E	003
Regulator Bd. Assy.		51883-01	G	003
Output Board Assy.		51890-01	C	003
COMMAND CLOCK SUBASSEMBLY	Calcomp	20001-102-401	1	LSC-FT1
Motor Drive Assy.	Calcomp	10812-502-000	4	F016
Frequency Amplifier Assy 1	Calcomp	10814-502-201	None	F015
Time Code Assy.	Calcomp	10816-502-000	4	F019
Frequency Amplifier Assy 2	Calcomp	10818-502-201	2	F015
Comstor Memory Assy.	Calcomp	10820-502-000	1	F015
Comstor Logic Assy.	Calcomp	10822-502-000	5	F015
Comdec Assy.	Calcomp	20438-502-000	5	F016
Telemetry Assy.	Calcomp	10826-502-000	8	F015
Matrix Assy.	Calcomp	10828-502-000	8	F016
Power Supply #1	Calcomp	10830-502-201	3	F016
Power Supply #2	Calcomp	10832-502-101	8	F015
Oscillator (A)	Calcomp	10003-502	None	F021
Oscillator (B)	Calcomp	10003-502	None	F023

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO	REV	SERIAL NO.
PCM TLM RECORDER #1	Lockheed	202835-001	H	EAB-FT6
Clutch Assy.	Lockheed	202800-001	A	1001
Preamp, Digital	Lockheed	202911-001	E	1002
Repr & Erase Con, Rec Logic	Lockheed	202915-001	K	1001
Amplifier, Record/Repr.	Lockheed	202920-001	E	1002
Motor Drive & Telemetry	Lockheed	202925-001	H	1002
Transport Group Subassembly	Lockheed	202930-001	F	1002
Lt. Source & Sensor Assy.	Lockheed	202932-001	A	1002
Electronic Switch, Mtr Invt	Lockheed	202965-001	A	1003
Electronic Switch, Mtr Invt	Lockheed	202965-001	A	1004
Power Supply	Lockheed	202966-001	D	1001
Power Supply Sub Assy #1	Lockheed	202967-001	A	1001
Power Supply Sub Assy #2	Lockheed	202968-001	A	1001
Vtg Reg & Current Telemetry	Lockheed	202973-001	G	1002
Tape and Reel Assy.	Lockheed	11-16154	P	1016
Filter, EOT Backup	Lockheed	11-16195	A	009
Magnetic Tape	Lockheed	1/4 - 551	None	1016
PCM TLM RECORDER #2	Lockheed	202835-001	G	EAB-FT5
Clutch Assy.	Lockheed	202800-001	A	1002
Preamp, Dig Repr & Erase	Lockheed	202911-001	E	1002
Control, Recorder Logic	Lockheed	202915-001	J	1002
Amplifier, Record/Repr.	Lockheed	202920-001	E	1001
Motor Drive & Telemetry	Lockheed	202925-001	H	1001
Transport Group Subassy.	Lockheed	202930-001	F	1001
Lt. Source & Sensor Assy.	Lockheed	202932-001	A	1002
Electronic Switch, Mtr Invt	Lockheed	202965-001	A	1001
Electronic Switch, Mtr Invt	Lockheed	202965-001	A	1002
Power Supply	Lockheed	202966-001	D	1002
Power Supply Sub Assy. #1	Lockheed	202967-001	A	1002
Power Supply Sub Assy. #2	Lockheed	202968-001	A	1002
Vtg Reg & Current Telemetry	Lockheed	202973-001	G	1001
Tape & Reel Assy.	Lockheed	11-16154	P	1015
Filter, EOT Backup	Lockheed	11-16195	A	008
Magnetic Tape	Lockheed	1/4 - 551	None	1015

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO	REV	SERIAL NO.
WIDEBAND POWER AMP. #1	Watkins-Johnson	612970	M	100
Traveling Wave Tube	"	612965	D	12
LV Pwr Supply Assy.	"	612982-001	G	100
Card Assy. No. 1, LV	"	612984-001	E	100
Card Assy. No. 2, LV	"	612986-001	F	100
HV Pwr Supply Assy.	"	612980-001	J	100
Card Assy. No. 1, HV	"	612997-001	D	100
Card Assy. No. 2, HV	"	612999-001	D	100
Card Assy. Turn-On Con.	"	612944-001	B	107
Cable Assy., RF	"	612977-001	D	100
Cable Assy., RF	"	612978-001	C	100
Cable Assy., RF	"	612979-001	C	100
Cover Amplifier	"	612957-001	C	101
Housing, Amplifier	"	612972-001	D	100
WIDEBAND POWER AMP. #2	Watkins-Johnson	612970	N	101
Traveling Wave Tube	"	612965	D	13
LV Pwr Supply Assy.	"	612982-001	H	101
Card Assy. No. 1, LV	"	612984-001	E	101
Card Assy. No. 2, LV	"	612986-001	F	101
HV Pwr. Supply Assy.	"	612980-001	J	101
Card Assy. No. 1, HV	"	612997-001	D	101
Card Assy. No. 2, HV	"	612999-001	D	101
Card Assy. Turn-On Con.	"	612944-001	B	108
Cable Assy., RF	"	612977-001	D	101
Cable Assy., RF	"	612978-001	C	101
Cable Assy., RF	"	612979-001	C	101
Cover Amplifier	"	612706-001	C	100
Housing, Amplifier	"	612972-001	D	101
ATTITUDE CONTROL SYSTEM	GE-SS	47E213514G2	AN-14	115
Telemetry Conversion Module	GE-SS	238R405G2	AN-20	6627051
Structure/Thermal Subsystem	FHC	831-11-0231	NONE	D02
Louver, Ht. Shld. & Supt.	FHC	831-11-0300-11	D	D02
Louver Support Assembly	FHC	831-11-0301-21	G	D02
Heat Shield Assembly	FHC	831-11-0306-31	B	1001
Louver Assembly	FHC	831-11-0120-31	B	D02
Temperature Sensing Inst	FHC	831-11-0142-21	G	D02
Albedo Shield, Left	FHC	831-11-0210-61	B	D02
Albedo Shield, Right	FHC	831-11-0210-62	B	D02
Temperature Sensing Inst.	FHC	831-11-0142-31	NONE	D02

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
ATTITUDE CONTROL SYSTEM (Cont)				
Pitch Reaction Wheel Assy.	Bendix	5088003-1	None	FT08
Housing & Closure Mach Asy	Bendix	5104109-1	None	7603003
Housing Assy.	Bendix	5104108-1	None	7603003
Housing, Base	Bendix	5170419-1	A	7603003
Hub, Stator Assy.	Bendix	5104104-1	None	7604002
Hub, Stator	Bendix	5170417-1	None	7604002
Stator Motor	Bendix	1877036-1	D	7512003
Closure & Brg. Hous. Assy.	Bendix	5104105-1	None	7603003
Closure, Housing	Bendix	5170418-1	A	7603003
Housing, Bearing	Bendix	5170409-1	None	7604002
Flywheel & Rotor Assy.	Bendix	5104107-1	None	7606002
Rotor, Motor	Bendix	1877013-1	B	7511005
Flywheel	Bendix	5170420-1	None	7606002
Shaft, Shouldered	Bendix	5170410-1	None	7602
Disc, Labyrinth Shield	Bendix	5170411-1	None	7604, 7603
Cap	Bendix	5170413-1	None	7604002
Mag. Speed Pickup	Bendix	1981285-1	None	44
Thermistor	Bendix	1981310-1	B	23
Ball Bearings	Bendix	2211189-1	A	252, 270
Yaw Reaction Wheel Assy.	Bendix	5088006-1	None	FT06
Housing & Closure Mach Asy	Bendix	2448966-1	None	7602010
Housing & Stator Assy.	Bendix	2448965-1	None	7602010
Housing Assy.	Bendix	2448962-1	None	7602010
Thermistor	Bendix	2211117-1	A	43
Stator & Sleeve Assy.	Bendix	1891420-1	C	7604001
Sleeve, Bearing	Bendix	1898717-1	A	7604001
Stator Assy.	Bendix	1877036-1	D	7512001
Closure & Sleeve Assy.	Bendix	1898723-1	C	7602010
Sleeve, Bearing	Bendix	1898719-1	A	7501
Closure, Housing	Bendix	1898715-1	E	7602010
Flywheel & Rotor Assy.	Bendix	1898721-1	D	7601
Flywheel, Reaction	Bendix	1898716-1	C	7601
Rotor, Motor	Bendix	1877013-1	B	7511008
Shaft, Shouldered	Bendix	1898730-1	B	7604001
Seal, Labyrinth	Bendix	1898728-1	None	7501
Ring, Locking	Bendix	1898729-1	B	7501
Magnetic Speed Pickup	Bendix	1981285-1	None	A41
Ball Bearings	Bendix	2211190-1	B	165, 172
Control Logic Box	Ithaco	D40778G3	D	LSCFT16
A1 Card	Ithaco	D40721G2	E	21391
A2 Card	Ithaco	D40752G2	E	21392
A3 Card	Ithaco	D40753G2	E	21393
A4 Card	Ithaco	D40754G2	E	21394
A5 Card	Ithaco	D40755G2	F	21395
A6 Card	Ithaco	D40253G3	E	21396
A7 Card	Ithaco	D40253G3	E	21397
A8 Card	Ithaco	D40728G2	F	21398
A9 Card	Ithaco	D40179G3	G	21399

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
ATTITUDE CONTROL SYSTEM (Cont)				
RRWS/Signal Processor Assy.#1	Ithaco	D40770G5	E	LSCFT17
Signal Processor	Ithaco	D40769G5	E	21388
A1 Card	Ithaco	C30302G3	J	27324
A2 Card	Ithaco	C31066G2	D	27326
A3 Card	Ithaco	C31167G2	C	21403
Roll Reaction Wheel Scanner	Bendix	D88357P1	B	7604001
RRWS/Signal Processor Assy. #2	Ithaco	D40770G6	E	LSCFT19
Signal Processor	Ithaco	D40769G6	E	21390
A1 Card	Ithaco	C30302G3	J	21400
A2 Card	Ithaco	C31066G2	D	21401
A3 Card	Ithaco	C31167G2	C	21402
Roll Reaction Wheel Scanner	Bendix	D88357P1	B	7606002
Pneumatics Subsystem	TRW	113580		004R
Solenoid Valves				
+ Pitch		PT2-3030-1	F	9
- Pitch		PT2-3030-1	F	10
+ Roll		PT2-3030	F	18
- Roll		PT2-3030	F	13
+ Yaw		PT2-3030	F	12
- Yaw		PT2-3030	F	9
Supt. Nozzle Tube Assemblies				
+ Yaw		116599-5	C-5	4
- Yaw		116599-6	C-5	4
+ Yaw		113586-6	C-5	4
- Yaw		113586-5	C-5	4
Nozzles				
+ Pitch		113591-3	B-6	005
- Pitch		113591-3	B-6	008
+ Roll		113593-3	B-3	021
- Roll		113593-3	B-3	022
+ Yaw		113593-3	B-3	023
- Yaw		113593-3	B-3	019
+ Yaw		113593-3	B-3	024
- Yaw		113593-3	B-3	020
Regulator		PT2-3032	E	6
Low Pressure Transducer		PT2-3068	C	21
High Pressure Transducer		PT2-3033	F	1005
Gas Temperature Transducer		PT2-3035-1	D	5
Manifold Temp. Transducer		PT2-3035-2	E	4
Pressure Vessel		C113441-2	A-4	5
Fill Valve		C263256-1	None	28485-1
Manifold		113582-2	D-1	3
Mounting Platform		113581-6	D-3	4
LLPS Filter		C120631-1	None	003
Junction Box		233586-4	C-6	005

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO	REV	SERIAL NO.
ATTITUDE CONTROL SYSTEM (Cont)				
Solar Array Drive, RH	TRW	E246623-8	A	FT11
A1 Electronics		E235406-4	K2	10
A2 Electronics		E235397	H2	10
Wabble Gear		233773-3	C1	11
Motor		264666	B1	26
Sun Sensor		E242143-1	D2	31, 32
Voltage Regulator		E250692-1	E1	11
Transducer		PT2-3039	F	1019
Potentiometer		PT2-3040	C	03-248-03-2
Slip Ring		EQ2-114	D	12
Solar Array Drive, LH	TRW	E246623-8	B	FT10
A1 Electronics		E235406-4	K2	09
A2 Electronics		E235397-4	H2	09
Wabble Gear		233773-3	G1	10
Motor		264666	B1	25
Sun Sensor		E242143-1	D2	33, 34
Voltage Regulator		E250692-1	E1	10
Transducer		PT2-3039	F	1018
Potentiometer		PT2-3040	C	496082
Slip Ring		EQ2-114	D	11
Rate Measuring Package A	Sperry	4310-90641-905	G	FT05
Rate Loop Elect. Card	Sperry	4216-67676	F	12
Power Conditioning Card	Sperry	4331-91544	A	17
Heater Controller Card	Sperry	4216-67678	K	12
Telem. Sig. Cond. Card	Sperry	4216-67679	I	12
Relay Card A	Sperry	4331-91545	NONE	18
Relay Card B	Sperry	4216-67681	C	17
Inventer Subassembly	Sperry	4331-91579	NONE	13
RFI Assembly	Sperry	4310-90627	C	12
RMP Cable Harness	Sperry	4216-90956-2	F	12
Gyro, Rate Integrating	Northrop	P/N 67516	NONE	N-7A
Normalization Assembly	Sperry	4331-91578	NONE	16
Rate Measuring Package B	Sperry	4310-90641-903	G	FT10
Rate Loop Elect. Card	Sperry	4216-67676	G	22
Power Conditioning Card	Sperry	4216-67677	G	13
Heater Controller Card	Sperry	4216-67678	L	23
Telem. Sig. Cond. Card	Sperry	4216-67679	K	22
Relay Card A	Sperry	4310-90848	A	13
Relay Card B	Sperry	4310-90841	B	13
Inverter Subassembly	Sperry	4310-90633	F	11
RFI Assembly	Sperry	4310-90627	C	21
RMP Cable Harness	Sperry	4216-90956-2	F	18
Gyro. Rate Integrating	Sperry	1200941	F	14
Normalization Assembly	Sperry	4310-90843	F	12

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
ATTITUDE CONTROL SYSTEM (Cont)				
Yaw Rate Gyro	Northrop	63861-302	J	FT05
Choke, Module		63880-301	C	103
Transformer, Module		63881-301	C	105
Thermistor, Module		63866-302	E	106
Gyroscope, Rate		79142-301	D	61501
P.C. Component Board		63876-302	J	N5
P.C. Component Board		63877-302	K	N5
P.C. Component Board		63878-302	J	N5
P.C. Component Board		63879-302	J	N5
Package Assembly		63843-302	S	FT05
Component Board		63844-302	E	N5
Initiation Timer	GE-SS	47E221985G2	AN-10	6627055
INTERFACE SWITCHING MODULE	Calcomp	20002-102	6	LSC-FT1
Relay Network No. 2B	Calcomp	10326-502-100	6	F3025
Relay Network No. 1	Calcomp	10323-502-000	7	F3029
Relay Network No. 1	Calcomp	10323-502-000	7	F3028
Relay Network No. 2B	Calcomp	10326-502-100	6	F3024
Resistor Network	Calcomp	20431-502-000	4	F3008
Relay Network No. 1	Calcomp	10323-502-000	7	F3026
Relay Network No. 2B	Calcomp	10326-502-100	6	F3023
Resistor Network	Calcomp	20431-502-000	4	F3009
Relay Network No. 4B	Calcomp	10475-502-000	6	F3007
Relay Network No. 2B	Calcomp	10326-502-100	6	F3022
Relay Network No. 1	Calcomp	10323-502-000	7	F3025
Relay Network No. 1	Calcomp	10323-502-000	7	F3027
Cable No. 1 - Jumper	Calcomp	10111-401-000	1	F3020
Cable No. 1 - Jumper	Calcomp	10111-401-000	1	F3021
Cable No. 1 - Jumper	Calcomp	10111-401-000	1	F3019
Cable No. 2 - Jumper	Calcomp	10110-401-000	5	F3027
Cable No. 2 - Jumper	Calcomp	10110-401-000	5	F3025
Cable No. 2 - Jumper	Calcomp	10110-401-000	5	F3028
Cable No. 2 - Jumper	Calcomp	10110-401-000	5	F3026
Cable No. 4 - Jumper	Calcomp	10146-401-000	1	F3009
Cable No. 6 - Jumper	Calcomp	10269-401-000	8	F3012
Cable No. 6 - Jumper	Calcomp	10269-401-000	8	F3011
Cable No. 9 - Jumper	Calcomp	20205-401-000	4	F3008
Cable No. 9 - Jumper	Calcomp	20205-401-000	4	F3009
Wideband Antenna #1	GE-SS	47D222340G5	AN-9	6627063
Wideband Antenna #2	GE-SS	47D222340G5	AN-9	6549451
DCS Antenna	GE-SS	47D210564G3	AN-6	6549520
Stub Receiving Element	GE-SS	113C7468G1	AN-3	6549517
S-Band Antenna	GE-SS	111C2955G6	AN-10	6627121
Quadraloop Antenna #1	GE-SS	248E754G8	AN-6	6627122
#2	GE-SS	248E754G8	AN-6	6549238
#3	GE-SS	248E754G8	AN-6	6627123
#4	GE-SS	248E754G8	AN-6	6549237

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
TELEMETRY PROCESSOR	GDO	00-002883-1	D	101
PC Card A1	GDO	12-890759-1	B	103
PC Card A2	GDO	12-890759-1	B	101
PC Card A3	GDO	12-890766-1	C	102
PC Card A4	GDO	12-890766-1	C	101
PC Card A5	GDO	12-890767-1	A	102
PC Card A6	GDO	12-890762-1	C	101
PC Card A7	GDO	12-890765-1	F	102
PC Card A8	GDO	12-890765-1	F	101
PC Card A9	GDO	12-890762-2	C	101
PC Card A10	GDO	12-890762-3	C	101
PC Card A11	GDO	12-890761-1	D	101
PC Card A12	GDO	12-890760-1	C	102
PC Card A13	GDO	12-890760-1	C	101
PC Card A14	GDO	12-890760-2	C	102
PC Card A15	GDO	12-890760-3	C	102
PC Card A16	GDO	12-890760-4	C	102
PC Card A17	GDO	12-890767-1	A	101
PC Card A18	GDO	12-890760-2	C	101
PC Card A19	GDO	12-890760-3	C	101
PC Card A20	GDO	12-890760-4	C	101
PC Card A21	GDO	12-890760-5	C	101
PC Card A22	GDO	12-890762-4	C	101
PC Card A23	GDO	12-890762-5	C	101
PC Card A24	GDO	12-890764-1	A	101
PC Card A25	GDO	12-890763-1	B	101
PC Card A26	GDO	12-890768-1	A	101
PC Card A27	GDO	12-890780-1	None	101
PC Card A28	GDO	12-890769-1	A	101
PC Card A29	GDO	12-890770-1	E	102
PC Card A30	GDO	12-890770-1	E	101

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
WIDE BAND VIDEO TAPE RECORDER	RCA			LC-FT09
Electronic Unit	RCA	8370323-502	J	250
Buffer, A1	RCA	8370923-503	D	252
Buffer, A2	RCA	8359642-503	D	252
Decoder, A3	RCA	8377417-501	-	250
Master Clock, A4	RCA	8370924-503	E	251
VAR Clock, A5	RCA	8370925-503	G	253
VAR Clock, A6	RCA	8370925-503	G	252
Aux Rec. Sear PL, A7	RCA	8359706-503	E	250
Aux Playback, A8	RCA	8359705-503	E	250
Sync Speed Det., A9	RCA	8370995-503	H	252
Volt. Prot/SS5, A10	RCA	8359704-505	G	251
Control, A11	RCA	8359697-503	H	251
Cycler, A12	RCA	8370928-503	P	250
Command, A13	RCA	8377418-501	A	251
Converter, A14	RCA	8359703-503	G	252
Motor Aux, A15	RCA	8371730-503	G	251
FM Equalizer, A16	RCA	8379693-503	G	252
Demod, A17	RCA	8359691-503	L	255
Demod, A18	RCA	8359691-503	L	252
RBV Out Rec. Adj., A19	RCA	8359753-503	E	250
MSS/RBV/In, A20	RCA	8359689-503	E	252
FM Modulator, A21	RCA	8359690-503	G	250
Telemetry, A22	RCA	8370926-503	G	251
Capstan Servo, A23	RCA	8359754-503	J	251
REF Generator, A24	RCA	8359695-503	G	250
TW Processor, A25	RCA	8370927-503	H	251
I. W. Cap Br., A26	RCA	8359699-503	E	250
H. W. Bridge, A27	RCA	8359698-503	E	250
H. W. & I.W. Driver, A28	RCA	8359701-505	M	251
Driver & Damper, A29	RCA	8359702-503	G	251
Capstan Drive, A30	RCA	8359699-503	E	251
Filter Assembly, A32	RCA	8671063-502	D	251
Transport Unit	RCA	8358497-502	M	250
Rec/Preamp, A80	RCA	8359708-503	H	251
Rec/Preamp, A86	RCA	8359708-503	H	252
Playback Ampl., A92	RCA	8359709-503	F	250
Search Preamp, A94	RCA	8359757-503	E	251
Tach Preamp, A96	RCA	8359710-503	E	250

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
WIDE BAND VIDEO TAPE RECORDER	RCA			LC-FT10
Electronic Unit	RCA	8370323-502	J	251
Buffer, A1	RCA	8370923-503	D	251
Buffer, A2	RCA	8359642-503	D	250
Decoder, A3	RCA	8377417-501	-	251
Master Clock, A4	RCA	8370924-503	E	252
VAR Clock, A5	RCA	8370925-503	G	251
VAR Clock, A6	RCA	8370925-503	G	250
Aux. Rec. Sear PL, A7	RCA	8359706-503	E	252
Aux Playback, A8	RCA	8359705-503	E	251
Sync Speed Det., A9	RCA	8370995-503	H	251
Volt. Prot/SS5, A10	RCA	8359704-505	G	252
Control, A11	RCA	8359697-503	H	252
Cycler, A12	RCA	8370928-503	P	252
Command, A13	RCA	8377418-501	A	252
Converter, A14	RCA	8359703-503	G	251
Motor Aux., A15	RCA	8371730-503	G	250
FM Equalizer, A16	RCA	8379693-503	G	250
Demod, A17	RCA	8359691-503	L	253
Demod, A18	RCA	8359691-503	L	254
RBV Out Rec. Adj., A19	RCA	8359753-503	E	251
MSS/RBV/In, A20	RCA	8359689-503	E	251
FM Modulator, A21	RCA	8359690-503	G	252
Telemetry, A22	RCA	8370926-503	G	252
Capstan Servo, A23	RCA	8359754-503	J	252
REF Generator, A24	RCA	8359695-503	G	251
TW Processor, A25	RCA	8370927-503	H	252
I.W. Cap Br., A26	RCA	8359699-503	E	253
H. W. Bridge, A27	RCA	8359698-503	E	251
H. W. & I. W. Driver, A28	RCA	8359701-505	M	252
Driver & Damper, A29	RCA	8359702-503	G	252
Capstan Drive, A30	RCA	8359699-503	E	252
Filter Assembly, A32	RCA	8671063-502	D	250
Transport Unit	RCA	8358497-502	M	251
Rec/Preamp, A80	RCA	8359708-503	H	253
Rec/Preamp, A86	RCA	8359708-503	H	250
Playback Ampl., A92	RCA	8359709-503	F	252
Search Preamp, A94	RCA	8359757-503	E	252
Tach Preamp, A96	RCA	8359710-503	E	252

CONSOLIDATED CONFIGURED ARTICLES LIST

LANDSAT SPACECRAFT 905

NOMENCLATURE	SUPPLIER	DWG & PART NO.	REV	SERIAL NO.
VHF TRANSMITTER	RADIATION	613202G1	A1	0001(PR002)
Electrical Assembly		613205G1	None	0001
RF Transmitter Assembly		613203G1	B1	0001
Oscillator/Buffer A1		529611G1	A5	0002
Phase Modulator A2		529738G1	A2	0002
Limiter Tripler A3		529612G1	A7	0003
Driver Amplifier A4		418053G1	A7	0003
300 MV Amplifier A5		529609G1	A5	0005
2 W Amplifier A6		529610G1	A8	0004
Output Filter A7		418054G1	A4	0005
Oscillator/Buffer A8		529611G1	A5	0001
Phase Modulator A9		529738G1	A2	0001
Limiter Tripler A10		529612G1	A7	0001
Driver Amplifier A11		418053G1	A7	0004
300 MV Amplifier A12		529609G1	A5	0006
2 W Amplifier A13		529610G1	A8	0006
Output Filter A14		418054G1	A4	0006
Isolator A15		115479-102	E	12
Power Reg. Elec. Assembly		613209G1	A	0001
Power Regulator		529615G1	A2	0002
Filter Modulator		529732G1	A2	0001
Fluid Damper Assembly	GE-SS	248E126G6	AN-21	6549688
Fluid Damper Assembly	GE-SS	248E126G6	AN-21	6549711
GOVERNMENT FURNISHED EQUIPMENT				
RETURN BEAM VIDICON & ELECT.	RCA	2284900-501		
Camera Sensor #2	RCA	2284910-501		103
Camera Sensor #1	RCA	2284910-501		102
Camera Cont./Combiner	RCA	2284903-501		101
Camera Electronics #1	RCA	2284902-501		102
Camera Electronics #2	RCA	2284902-501		103
MULTI SPECTRAL SCANNER SYSTEM	Hughes	3241000-100		001
Multiplexer	Hughes	3241140-100		003
Scanner	Hughes	3241120-100		001
Radiation Cooler	Hughes	3241150-100		003
ECAM	GSFC	GF1308902		FT1

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MA / MB	000	001	002	003	004	005	006	007	010	011	012	013	014	015	016	017
000	CLOCK (000) SPARE	CLOCK (001) PRIMARY COMSTOR ON (FILL 003,005,006	CLOCK (002) SPARE	CLOCK (003) PRIMARY COMSTOR VERIFY 001,005,006	CLOCK (004) PRIMARY COMSTOR COPY	CLOCK (005) PRIMARY COMSTOR OFF 001	CLOCK (006) PRIMARY COMSTOR ACTIVATE 001,003005	CLOCK (007) SERIAL DATA TRANSFER ON	CLOCK (010) COMMAND EXECUTION COUNTER RESET	CLOCK (011) SELECT PRIMARY MATRIX DECODER 031	CLOCK (012) SELECT PRIMARY MATRIX A DRIVERS 032	CLOCK (013) SELECT PRIMARY MATRIX B DRIVERS 033	CLOCK (014) SELECT PRIMARY OSCILLATOR 034	CLOCK (015) SELECT PRIMARY FREQ GENERATOR 035	CLOCK (016) SPARE	CLOCK (017) LOAD TIME CODE
020	CLOCK (020) TURN NON-KEYED PS/COMDEC OFF CAUTION	CLOCK (021) REDUNDANT COMSTOR ON (FILL 023,025,026	CLOCK (022) SPARE	CLOCK (023) REDUNDANT COMSTOR VERIFY 021,025,026	CLOCK (024) REDUNDANT COMSTOR COPY	CLOCK (025) REDUNDANT COMSTOR OFF 021	CLOCK (026) REDUNDANT COMSTOR ACTIVATE 021,023,025	CLOCK (027) SPARE	CLOCK (030) SPARE	CLOCK (031) SELECT REDUNDANT MATRIX DECODER 011	CLOCK (032) SELECT REDUNDANT MATRIX A DRIVERS 012	CLOCK (033) SELECT REDUNDANT MATRIX B DRIVERS 013	CLOCK (034) SELECT REDUNDANT OSCILLATOR 014	CLOCK (035) SELECT REDUNDANT FREQ GENERATOR 015	CLOCK (036) SPARE	CLOCK (037) SPARE
040	ACS (040) PNEUMATICS ENABLE 061	ACS (041) 0.3° YAW POS BIAS ENABLE 060	ACS (042) PNEUMATICS INTERLOCK BYPASS DISABLE 063		ACS (044) PNEUMATICS LOW VOLTAGE INTERLOCK RESET	ACS (045) DIFF TACH DISABLE 064	WBPA 2 (046) POWER ON 067	WBPA 2 (047) SELECT 10 WATT OUTPUT 106	APU (050) STANDBY MODE 077	ECAM (051) ECAM LOAD 045		MSS (053) SYSTEM A ON 073	MSS (054) SELECT BAND 1 HIGH VOLTAGE A 075	MSS (055) SELECT BAND 2 HIGH VOLTAGE A 076	MSS (056) SELECT BAND 3 HIGH VOLTAGE A 077	MSS (057) BAND 1 ON 076
060	ACS (060) 0.3° YAW POS BIAS DISABLE 041	ACS (061) PNEUMATICS DISABLE 040		ACS (063) PNEUMATICS INTERLOCK BYPASS ENABLE 042	ACS (064) DIFF TACH ENABLE 045	ECAM (065) ECAM EXECUTE 057		WBPA 2 (067) POWER OFF 046	ALC (070) MSS MAG COMP OFF 111	APU (071) NORMAL MODE 070	MSS (072) SYSTEM B ON 073	MSS (073) SYSTEM OFF 053,072	MSS (074) SELECT BAND 2 HIGH VOLTAGE B 055	MSS (075) SELECT BAND 1 HIGH VOLTAGE B 054	MSS (076) BAND 1 OFF 057	MSS (077) SELECT BAND 3 HIGH VOLTAGE B 056
100	ACS (100) DIFF TACH NORMAL GAIN 121	ACS (101) 0.1° YAW POS BIAS ENABLE 120	ACS (102) RLNA INTO YAW DISABLE 123	ACS (103) 2.9° PITCH POS BIAS ENABLE 122	ACS (104) PITCH MOMENTUM BIAS MODE DISABLE 125	ECAM (105) ECAM RUN A 164	WBPA 2 (106) SELECT 20 WATT OUTPUT 047	USB XPDR (107) BYPASS AUX OSC 150	USB XPDR (110) SELECT XMTR B 120	ALC (111) MSS MAG COMP ON 070	MSS (112) HIGH VOLTAGE ON 132	MSS (113) BAND 2 ON 132	MSS (114) BAND 3 ON 135	MSS (115) BAND 4 ON 134	MSS (116) BAND 5 ON 137	MSS (117) SELECT CALIBRATION LAMP A 136
120	ACS (120) 0.1° YAW POS BIAS DISABLE 101	ACS (121) DIFF TACH HIGH GAIN 100	ACS (122) 2.9° PITCH BIAS DISABLE 103	ACS (123) RLNA INTO YAW ENABLE 102	ACS (124) NEGATIVE PITCH POSITION BIAS 127	ACS (125) PITCH MOMENTUM BIAS MODE ENABLE 101	USB XPDR (126) SELECT XMTR A 110	USB XPDR (127) RANGING ON 146	USB XPDR (130) MODULATION INPUT CROSSED 147		MSS (132) BAND 2 OFF 113	MSS (133) DOOR MOTOR POWER OFF 251	MSS (134) BAND 4 OFF 115	MSS (135) BAND 3 OFF 114	MSS (136) SELECT CALIBRATION LAMP B 117	MSS (137) BAND 5 OFF 116
140	ACS (140) ROLL UNLOAD DISABLE 161	ACS (141) NEGATIVE YAW POS BIAS 160	ACS (142) YAW WHEEL DISABLE 163		ACS (144) PITCH UNLOAD DISABLE 162	ACS (145) POSITIVE PITCH POSITION BIAS 124	USB XPDR (146) RANGING OFF 127	USB XPDR (147) MODULATION INPUT NORMAL 130	USB XPDR (150) ENABLE AUX OSC 101		MSS (152) ROTATING SHUTTER DRIVER ON 173	MSS (153) SCAN MONITOR ON 172	MSS (154) BAND 1 HIGH GAIN 177	MSS (155) BAND 2 HIGH GAIN 174	MSS (156) CALIBRATION LAMP ON 175	MSS (157) BAND 1 HIGH VOLTAGE ON 176
160	ACS (160) POSITIVE YAW POS BIAS 141	ACS (161) ROLL UNLOAD ENABLE 140	ACS (162) PNEUMATICS MOMENTARY ENABLE	ACS (163) YAW WHEEL ENABLE 142	ECAM (164) ECAM RUN B 165	ACS (165) PITCH UNLOAD ENABLE 144	VHF XMTR (166) PLAYBACK NBTR 2 033,07	VHF XMTR (167) POWER #1 OFF 216	VHF XMTR (170) POWER #2 ON 211	VHF XMTR (171) PLAYBACK OVERIDE OFF 230	MSS (172) SCAN MONITOR OFF 153	MSS (173) ROTATING SHUTTER DRIVER OFF 152	MSS (174) BAND 2 LOW GAIN 155	MSS (175) BAND 1 LOW GAIN 154	MSS (176) BAND 1 HIGH VOLTAGE OFF 157	MSS (177) CALIBRATION LAMP OFF 156
200	ACS (200) ORBIT ADJUST MODE ENABLE 221	ECAM (201) ECAM ON 220	ACS (202) RMP A ENABLE 227	ACS (203) 400 RPM INTERLOCK ENABLE	ACS (204) YAW ACQUISITION MODE 225	PSM (205) VTR 1 POWER BYPASS ON 224	VHF XMTR (206) POWER #1 ON 167	VHF XMTR (207) REAL TIME MODE 240,257	VHF XMTR (210) POWER MODE 227	VHF XMTR (211) POWER #2 OFF 170	MSS (212) BAND 2 HIGH VOLTAGE ON 233	MSS (213) BAND 3 HIGH VOLTAGE ON 232	MSS (214) SELECT SHUTTER MONITOR SOURCE A 235	MSS (215) DOOR DIRECTION OPEN 234	MSS (216) DOOR OVER RIDE ACTIVATE 278	
220	ECAM (220) ECAM OFF 241	ACS (221) ORBIT ADJUST MODE DISABLE 204	ACS (222) 400 RPM INTERLOCK DISABLE	ACS (223) RMP B ENABLE	PSM (224) VTR 1 POWER BYPASS OFF 205	ACS (225) YAW NORMAL MODE 204		VHF XMTR (230) HIGH POWER MODE 210	VHF XMTR (230) PLAYBACK OVERRIDE ON 171	VHF XMTR (231) SELECT XMTR A 250	MSS (232) BAND 3 HIGH VOLTAGE OFF 231	MSS (233) BAND 2 HIGH VOLTAGE OFF 232	MSS (234) DOOR DIRECTION CLOSE 215	MSS (235) SELECT SHUTTER MONITOR SOURCE B 216		MSS (237) DOOR MOTOR POWER ON 193
240		PSM (241) VTR 2 POWER BYPASS ON 320			ACS (244) LEFT SAD NORMAL RATE 325	ACS (245) INH. STOR. CMDS/ ZERO TIME	POWER (246) BATTERY #1 OFF 353	ACS (247) RMP B HEATER OFF 306	VHF XMTR (250) SELECT XMTR B 231	VHF XMTR (251) PLAYBACK NBTR 1 244,207	MSS (252) DOOR MOVE	MSS (253) BAND 5A GAIN STEP	MSS (254) DOOR HOLD ON 275	MSS (255) SELECT SCAN MONITOR SOURCE A 274	MSS (256) SCAN MIRROR INHIBIT 277	MSS (257) MUX NORMAL 276
260	TMP (260) A/D A ON 301	TMP (261) OUTPUT CIRCUIT A ON 307	TMP (262) SELECT FORMAT 1 303		POWER (264) BATTERY #5 OFF 353	POWER (265) BATTERY #6 OFF 353	ACS (266) RMP B OFF 307,310,320	POWER (267) BATTERY #2 OFF 353	ACS (270) RIGHT SAD DISABLE 311	ACS (271) RMP A MOTOR START 307,310,320	MSS (272) BAND 5B GAIN STEP	MSS (273) DOOR OVER RIDE RESET 216	MSS (274) SELECT SCAN MONITOR SOURCE B 255	MSS (275) DOOR HOLD OFF 254	MSS (276) MUX INHIBIT 257	MSS (277) SCAN MIRROR NORMAL 256
300	TMP (300) CONTROL	TMP (301) A/D B	TMP (302) OUTPUT	TMP (303) SELECT FORMAT	ACS (304) RMP B	ACS (305) RMP B HEATER	POWER (306) BATTERY	ACS (307) RMP A	POWER (310) BATTERY	ACS (311) RIGHT	MSS (312) SCAN	MSS (313) DOOR	MSS (314) MID	MSS (315) MUX	PSM (316) MSS	MSS (317) RADIATION

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240		PSM (241) VTR 2 POWER BYPASS ON 320			ACS (242) LEFT SAD NORMAL RATE 325	ECAM (243) INH. STOR CMDS/ ZERO TIME	POWER (244) BATTERY #1 OFF 353	ACS (247) RMP B HEATER OFF 305	VHF XMTR (250) SELECT XMTR B 231	VHF XMTR (251) PLAYBACK NBTR 1 166,207	MSS (252) DOOR MOVE	MSS (253) BAND 5A GAIN STEP	MSS (254) DOOR HOLD ON 275	MSS (255) SELECT SCAN MONITOR SOURCE A 274	MSS (256) SCAN MIRROR INHIBIT 277	MSS (257) MUX NORMAL 276
260	TMP (260) A/D A ON 90	TMP (261) OUTPUT CIRCUIT A ON 307	TMP (262) SELECT FORMAT 1 303		POWER (264) BATTERY #5 OFF 353	POWER (265) BATTERY #6 OFF 353	ACS (266) RMP B OFF	POWER (267) BATTERY #2 OFF 353	ACS (270) RIGHT SAD DISABLE 311	ACS (271) RMP A MOTOR START	MSS (272) BAND 5B GAIN STEP	MSS (273) DOOR OVER RIDE RESET 216	MSS (274) SELECT SCAN MONITOR SOURCE B 255	MSS (275) DOOR HOLD OFF 264	MSS (276) MUX INHIBIT 57	MSS (277) SCAN MIRROR NORMAL 256
300	TMP (300) CONTROL LOGIC A ON 121	TMP (301) A/D B ON 61	TMP (302) OUTPUT CIRCUIT B ON 321	TMP (303) SELECT FORMAT 0	ACS (304) RMP B MOTOR ON 1-61	ACS (305) RMP B HEATER (ELEC ON 64	POWER (306) BATTERY #7 OFF 353	ACS (307) RMP A OFF 1-69	POWER (310) BATTERY #3 OFF 353	ACS (311) RIGHT SAD ENABLE 270	MSS (312) SCAN MIRROR POWER LINE 1 336	MSS (313) DOOR OVER RIDE SAFETY-SAFE 334	MSS (314) MID SCAN CODE ON 335	MSS (315) MUX COMPRESSION MODE 333	PSM (316) MSS HEATER ON 337	MSS (317) RADIATION COOLER POWER ON 332
320	PSM (320) VTR 2 POWER BYPASS OFF 241	TMP (320) CONTROL LOGIC B ON 201			ECAM (320) ECAM OUTPUT ENABLE	ACS (325) LEFT SAD HIGH RATE 294	ACS (326) RMP A ON 307	POWER (327) BATTERY #8 OFF 355	ACS (330) RMP B LOWER MOTOR VOLTAGE 266	POWER (331) BATTERY #4 OFF 353	MSS (332) RADIATION COOLER POWER OFF 317	MSS (333) MUX LINEAR MODE 316	MSS (334) DOOR OVER RIDE SAFETY ARM 313	MSS (335) MID SCAN CODE OFF 314	MSS (336) SCAN MIRROR POWER LINE 2 312	PSM (337) MSS HEATER OFF 316
340	TMP (340) POWER A ON/ B OFF 361,403	TMP (341) BI LEVEL MUX A ON 167	TMP (342) ANALOG MUX A1 ON 363		ACS (344) LEFT SAD DISABLE 365	PSM (345) SPARE 3 RESET 360	POWER (346) TRICKLE CHARGE NORMAL 367	PSM (347) ENABLE USBX OFF 364	DCS (350) RCVR 2 ON 406	PSM (351) RBV PRIMARY CONTROL ENABLE 424	RBV (352) CATHODE REACTIVATION ON 371	POWER (353) ALL BATTERIES ON (PRI)	POWER (354) SHUNT LOAD A OFF 437	POWER (355) ALL COMP LOADS OFF (PRI) 314,413	POWER (356) AUX LOAD #1 ON 314,413	POWER (357) AUX LOAD #2 ON 314,413
360	PSM (360) SPARE 3 SET 345	TMP (361) POWER A OFF 346	TMP (362) BI LEVEL MUX B ON 341	TMP (363) ANALOG MUX B1 ON 342	PSM (364) DISABLE USBX OFF 347	ACS (365) LEFT SAD ENABLE 344	DCS (366) RCVR 1 ON 407	POWER (367) TRICKLE CHARGE OVERRIDE 336	ACS (370) RMP A - HEATER ON 307,271	RBV (371) CATHODE REACTIVATION OFF 352	RPV (372) REPHASE FROM VTR 1 173	POWER (373) VERIFY TICK 457	POWER (374) ALL AUX LOADS OFF (PRI)	POWER (375) SHUNT LOAD B OFF 437	POWER (376) COMP LOAD #1 ON 456	POWER (377) COMP LOAD #2 ON 355
400		TMP (401) ANALOG MUX A2 ON 420	TMP (402) SERIAL MUX A ON 421	TMP (403) POWER B ON/A OFF 340,422	ACS (404) RIGHT SAD HIGH RATE 425		DCS (406) RCVR 2 OFF 350	DCS (407) RCVR 1 OFF 366	ACS (410) RMP A LOWER MOTOR VOLTAGE 271	RBV (411) CCC POWER ON 432	RBV (412) APERTURE CORRECTOR IN 471	POWER (413) ALL AUX LOADS OFF (B/U)	POWER (414) COMP LOAD 3 ON 355	POWER (415) SHUNT LOAD C OFF 437	POWER (416) COMP LOAD 4 ON 355	POWER (417) COMP LOAD 5 ON 355
420	TMP (420) ANALOG MUX B2 ON 401	TMP (421) SERIAL MUX 3 ON 402	TMP (422) POWER B OFF 403		PSM (424) RBV PRIMARY CONTROL DISABLE 351	ACS (425) RIGHT SAD NORMAL RATE 404	WBVTR1 (426) RECORD 447,469,485,509	RBV (427) SINGLE CYCLE 470	RBV (430) START PREPARE 451,452,453,454	RBV (431) APERTURE CORRECTOR OUT 412	RBV (432) CCC POWER OFF 411	RBV (433) CAMERA 1 ON 511	POWER (434) COMP LOAD 6 ON 355	POWER (435) AUX LOAD 3 ON 334,413	POWER (436) AUX LOAD 4 ON 334,413	POWER (437) ALL SHUNT LOADS ON 334,413
440					WBVTR1 (444) VOLTAGE PROTECT RELAY RESET	WBVTR1 (445) RECORD CURRENT ADJUST	WBVTR1 (446) BOT/EOT LOGIC ENABLE 672	WBVTR1 (447) PLAYBACK 470,447,485,509	RBV (450) EXPOSURE 1 451,452,453,454	RBV (451) EXPOSURE 2 450,452,453,454	RBV (452) EXPOSURE 3 450,451,453,454	RBV (453) EXPOSURE 4 450,451,452,454	RBV (454) EXPOSURE 5 450,451,452,453	POWER (455) AUX LOAD D ON 334,413	POWER (456) SHUNT LOAD D OFF 457	POWER (457) VERIFY TOCK 313
460					WBVTR1 (464) RBV STANDBY 446,447,485,509	WBVTR1 (465) FAST REWIND 446,447,485,509	WBFM (466) SELECT VCO B1 565	WBVTR1 (467) VOLTAGE PROTECT ENABLE 506	RBV (470) CONTINUOUS CYCLE 427	RBV (471) CAMERA 2 ON 510	RBV (472) START CALIB. 411	RBV (473) REPHASE FROM VTR 2 572	WBFM (474) AUX DATA TO RBV FILTER A 703	WBFM (475) DATA TO MSS FILTER B 760	WBFM (476) RT DATA TO RBV FILTER B 722	WBFM (477) ENABLE RBV FILTER B 686
500					WBVTR1 (504) FAST FOWARD 446,447,485,509	WBVTR1 (505) MSS STANDBY 446,447,485,509	WBVTR1 (506) VOLTAGE PROTECT DISABLE 41	WBVTR1 (507) LAP 446,447,485,509	RBV (510) CAMERA 2 OFF 471	RBV (511) CAMERA 1 OFF 423	POWER (512) ALL BATT ON (B/U) 446,447,485,509	WBVTR2 (513) RECORD 446,447,485,509	WBFM (514) DATA TO MSS FILTER A 141	WBFM (515) RT DATA TO RBV FILTER A 703	WBFM (516) DATA TO MSS FILTER B 760	WBFM (517) WBVTR 1 DATA TO RBV FILTER B 722
520					WBFM (524) SELECT VCO A1 547	WBFM (525) INVERTER A POWER ON 544	WBFM (526) ENABLE MODULATOR A AFC 545	WBFM (527) INVERTER B POWER OFF 650	WBFM (530) DISABLE MODULATOR B AFC 547	WBFM (531) WBVTR 2 DATA TO RBV FILTER B 722	WBVTR2 (532) RECORD CURRENT ADJUST 446,447,485,509	WBVTR2 (533) BOT/EOT LOGIC ENABLE 751	WBVTR2 (534) PLAYBACK 446,447,485,509	WBFM (535) DATA TO MSS FILTER A 741	WBFM (536) WBVTR 1 DATA TO RBV FILTER A 703	WBFM (537) WBVTR 1 DATA TO MSS FILTER B 760
540	WBPA1 (540) POWER ON 561	WBPA1 (541) SELECT 10 WATT OUTPUT 600	NBTR2 (542) PLAYBACK MODE 601,620	NBTR1 (543) RECORD MODE 502,621	WBFM (544) ENABLE RBV FILTER A 625	WBFM (545) DISABLE MODULATOR A AFC 526	WBFM (546) SELECT RBV BIAS A 564	WBFM (547) SELECT VCO A2 526	WBFM (550) INVERTER B POWER ON 527	WBVTR2 (550) RBV STANDBY 513,534,552,573,574	WBVTR2 (552) FAST REWIND 513,534,552,573,574	WBVTR2 (553) VOLTAGE PROTECT RELAY RESET 513,534,552,573,574	WBVTR2 (554) VOLTAGE PROTECT ENABLE 573	WBFM (555) ENABLE MSS FILTER A 686	WBFM (556) WBVTR 1 DATA TO MSS FILTER A 741	WBFM (557) WBVTR 2 DATA TO RBV FILTER A 703
560	PSM (560) ORBIT ADJUST TIMER ENABLE 603	WBPA1 (561) POWER OFF 540	NBTR1 (562) POWER OFF 543,621	PSM (563) WBVTR SEARCH TRACK SWITCHED 631	WBFM (564) SELECT RBV BIAS B 546	WBFM (565) SELECT VCO B2 606	WBFM (566) INVERTER A POWER OFF 525	WBFM (567) ENABLE MODULATOR B AFC 530	WBFM (570) WBVTR 2 DATA TO MSS FILTER B 760	WBVTR2 (570) FAST FOWARD 513,534,552,573,574	WBVTR2 (572) MSS STANDBY 513,534,552,573,574	WBVTR2 (573) VOLTAGE PROTECT RELAY RESET 513,534,552,573,574	WBVTR2 (574) LAP 513,534,552,573,574	WBFM (575) AUX DATA TO RBV FILTER B 722	WBFM (576) ENABLE MSS FILTER B 625	WBFM (577) WBVTR 2 DATA TO MSS FILTER A 741
600	WBPA1 (600) SELECT 20 WATT OUTPUT 561	NBTR2 (601) RECORD MODE 540,620	ACS (602) PITCH POS BIAS ARM 527	PSM (603) ORBIT ADJUST TIMER DISABLE 560	PMP (604) SELECT NBTR 2 646	PMP (605) MODULATOR A ON 626	PMP (606) SELECT NBTR 664	PSM (607) WBVTR 1 ON (PRIMARY) 651,666	PSM (610) MSS ENABLE (PRI) 641	POWER (611) ALL COMP LDS OFF (B/U) 770	PSM (612) REV #1 TEM DISABLE 770	ISM (613) DISABLE SELECTED SCANNER 634,738	ISM (614) SWITCHED TELEMETRY POWER ON 673	ISM (615) ORBIT ADJUST THRUSTER HEATER ON 657	ISM (616) MSFN TO CIU A/ STADAN TO CIU B 404,405	ISM (617) DISABLE PSM RELAY BUS 655
620	NBTR2 (620) POWER OFF 601,621	NBTR1 (621) PLAYBACK MODE 543,621	PSM (622) PRM FUSE TAP ON 767	ACS (623) PITCH POS BIAS DISARM 602	PMP (624) SELECT WBVTR 1 645	PSM (625) INHIBIT WBFM RBV A/MSS B FILTERS 544,556	PMP (626) MODULATOR A OFF 605	PSM (627) ORBIT ADJUST ON (1) 760,764	PSM (630) WBVTR 1 CONTROL NORMAL 643	PSM (631) WBVTR SEARCH TRACK NORMAL 663	PSM (632) MSS ENABLE (BOTH) 647	ISM (633) RIGHT SAD UNFUSED 674	ISM (634) CMD CLK RELAYS ON SA FUSE 633	ISM (635) SEPARATION SWITCH BYPASS 633	ISM (636) ENABLE SCAN & SELECT A 735,736	ISM (637) SPARE 4 RESET 735
640	ACS (640) 2.0 PITCH POS BIAS ENABLE 621	PSM (641) INVERTER A PWR TO WBFM 560	ACS (642) 0.6 PITCH POS BIAS ENABLE 630	PSM (643) WBVTR 1 CONTROL REVERSED 630	PMP (644) MODULATOR B ON 644	PMP (645) SELECT WBVTR 2 674	PMP (646) SELECT NBTR 1 604	PSM (647) MSS DISABLE 610,632,642	PSM (650) WBVTR 2 ON (PRIMARY) 717	PSM (651) WBVTR 1 OFF 607		ISM (652) CMD CLK RELAYS ON IA FUSE 634	ISM (654) LEFT SAD UNFUSED 735	ISM (655) ENABLE PSM RELAY BUS 737	ISM (656) APU POWER ON 737	ISM (657) ORBIT ADJUST THRUSTER HEATER OFF 615
660	PSM (660) INVERTER B PWR TO WBFM 561	ACS (661) 2.0 PITCH POS BIAS DISABLE 640	PSM (662) MSS ENABLE (RED) 647	ACS (663) 0.6 PITCH POS BIAS DISABLE 647	PMP (664) SELECT WBVTR 644	PMP (665) MODULATOR B OFF 644	PSM (666) INHIBIT WBFM RBV B/MSS A FILTERS 677,505	PSM (667) RBV ON (PRIMARY) 751,762	PSM (670) SOLENOID 1 ON 743,764	PSM (671) WBVTR 2 CONTROL NORMAL 728	PSM (672) #1 BOT/EOT LOGIC DISABLE 730	ISM (673) SWITCHED TELEMETRY POWER OFF 674	ISM (674) RIGHT SAD FUSED 633	ISM (675) LOCK SSM 738	ISM (676) ENABLE USB XMTRS (RED) 737	PSM (677) SPARE 1 SET 752
700	MMCA (700) POWER ON 701	ISM (701) ENABLE PAYLOAD TIMER 701	MMCA (702) PITCH COIL OUT 701	ISM (703) INHIBIT DATA TO RBV FILTERS 701	MMCA (704) YAW COIL OUT 701	PSM (705) PRIME DATA TO WBPA1/ 701	MMCA (706) CAP DUMP 701	PSM (707) RBV*2 TEM DISABLE 701	PSM (710) RBV ON (REDUNDANT) 701	PSM (711) SOLENOID 2 ON 701	PSM (712) WBVTR 2 OFF 701	ISM (713) LEFT SAD FUSED 701	ISM (714) UNLOCK SSM 701	ISM (715) MSFN TO CIU B/ STADAN TO 701	ISM (716) ATTITUDE SENSOR POWER 701	ISM (717) BOT/EOT LOGIC DISABLE 701

520					VCO A1	A POWER ON	MODULATOR A AFC	B POWER OFF	MODULATOR B AFC	DATA TO RBV FILTER B	CURRENT ADJUST	LOGIC ENABLE		TO MSS FILTER A	DATA TO RBV FILTER A	DATA TO MSS FILTER B
540	WBPA1 (540) POWER ON	WBPA1 (541) SELECT 10 WATT OUTPUT	NBTR2 (542) PLAYBACK MODE	NBTR1 (543) RECORD MODE	WBFM (544) ENABLE RBV FILTER A	WBFM (545) DISABLE MODULATOR A AFC	WBFM (546) SELECT RBV BIAS A	WBFM (547) SELECT VCO A2	WBFM (550) INVERTER B POWER ON	WBVTR2 (551) RBV STANDBY	WBVTR2 (552) FAST REWIND	WBVTR2 (553) VOLTAGE PROTECT RELAY RESET	WBVTR2 (554) VOLTAGE PROTECT ENABLE	WBFM (555) ENABLE MSS FILTER A	WBFM (556) WBVTR 1 DATA TO MSS FILTER A	WBFM (557) WBVTR 2 DATA TO RBV FILTER A
560	PSM (560) ORBIT ADJUST TIMER ENABLE	WBPA1 (561) POWER OFF	NBTR (562) POWER OFF	PSM (563) WBVTR SEARCH TRACK SWITCHED	WBFM (564) SELECT RBV BIAS B	WBFM (565) SELECT VCO B2	WBFM (566) INVERTER A POWER OFF	WBFM (567) ENABLE MODULATOR B AFC	WBVTR 2 DATA TO MSS FILTER B	WBVTR2 (570) FAST FOWARD	WBVTR2 (571) MSS STANDBY	WBVTR2 (572) VOLTAGE PROTECT DISABLE	WBVTR2 (573) LAP	WBFM (574) AUX DATA TO RBV FILTER B	WBFM (575) ENABLE MSS FILTER B	WBFM (576) WBVTR 2 DATA TO MSS FILTER A
600	WBPA1 (600) SELECT 20 WATT OUTPUT	NBTR2 (601) RECORD MODE	ACS (602) PITCH POS BIAS ARM	PSM (603) ORBIT ADJUST TIMER DISABLE	PMP (604) SELECT NBTR 2	PMP (605) MODULATOR A ON	PMP (606) SELECT NBTR	PSM (607) WBVTR 1 ON (PRIMARY)	PSM (610) MSS ENABLE (PRI)	POWER (611) ALL COMP LDS OFF (B/U)	PSM (612) RBV #1 TEM DISABLE	ISM (613) DISABLE SELECTED SCANNER	ISM (614) SWITCHED TELEMETRY POWER ON	ISM (615) ORBIT ADJUST THRUSTER HEATER ON	ISM (616) MSFN TO CIU A/ STADAN TO CIU B	ISM (617) DISABLE PSM RELAY BUS
620	NBTR2 (620) POWER OFF	NBTR1 (621) PLAYBACK MODE	PSM (622) PRM FUSE TAP ON	ACS (623) PITCH POS BIAS DISARM	PMP (624) SELECT WBVTR 1	PSM (625) INHIBIT WBFM RBV A/MSS B FILTERS	PMP (626) MODULATOR A OFF	PSM (627) ORBIT ADJUST ON (1)	PSM (630) WBVTR 1 CONTROL NORMAL	PSM (631) WBVTR SEARCH TRACK NORMAL	PSM (632) MSS ENABLE (BOTH)	ISM (633) RIGHT SAD UNFUSED	ISM (634) CMD CLK RELAYS ON SA FUSE	ISM (635) SEPARATION SWITCH BYPASS	ISM (636) ENABLE SCAN & SELECT A	ISM (637) SPARE 4 RESET
640	ACS (640) 2.0° PITCH POS BIAS ENABLE	PSM (641) INVERTER A PWR TO WBFM	ACS (642) 0.6° PITCH POS BIAS ENABLE	PSM (643) WBVTR 1 CONTROL REVERSED	PMP (644) MODULATOR B ON	PMP (645) SELECT WBVTR 2	PMP (646) SELECT NBTR 1	PSM (647) MSS DISABLE	PSM (650) WBVTR 2 ON (PRIMARY)	PSM (651) WBVTR 1 OFF		ISM (652) CMD CLK RELAYS ON IA FUSE	ISM (653) LEFT SAD UNFUSED	ISM (654) ENABLE PSM RELAY BUS	ISM (655) APU POWER ON	ISM (656) ORBIT ADJUST THRUSTER HEATER OFF
660	PSM (660) INVERTER B PWR TO WBFM	ACS (661) 2.0° PITCH POS BIAS DISABLE	PSM (662) MSS ENABLE (RED)	ACS (663) 0.6° PITCH POS BIAS DISABLE	PMP (664) SELECT WBVTR	PMP (665) MODULATOR B OFF	PSM (666) INHIBIT WBFM RBV B/MSS A FILTERS	PSM (667) RBV ON (PRIMARY)	PSM (670) SOLENOID 1 ON	PSM (671) WBVTR 2 CONTROL NORMAL	PSM (672) #1 BOT/EOT LOGIC DISABLE	ISM (673) SWITCHED TELEMETRY POWER OFF	ISM (674) RIGHT SAD FUSED	ISM (675) LOCK SSM	ISM (676) ENABLE USB XMTRS (RED)	PSM (677) SPARE 1 SET
700	MMCA (700) POWER ON	PSM (701) ENABLE PAYLOAD TIMER SIGNAL	MMCA (702) PITCH COIL OUT	PSM (703) INHIBIT DATA TO RBV FILTER A	MMCA (704) YAW COIL OUT	PSM (705) PRIME DATA TO WBPA 1/ WBPA 2	MMCA (706) CAP DUMP	PSM (707) RBV #2 TEM DISABLE	PSM (710) RBV ON (REDUNDANT)	PSM (711) SOLENOID 2 ON	PSM (712) WBVTR 2 OFF	ISM (713) LEFT SAD FUSED	ISM (714) UNLOCK SSM	ISM (715) MSFN TO CIU B/ STADAN TO CIU A	ISM (716) ATTITUDE SENSOR POWER ON	ISM (717) BOT/EOT LOGIC DISABLE ARM
720	PSM (720) DISABLE PAYLOAD TIMER SIGNAL	MMCA (721) PITCH COIL IN	PSM (722) INHIBIT DATA TO RBV FILTER B	MMCA (723) YAW COIL IN	PSM (724) SUMMED DATA TO WBPA 1	MMCA (725) CAP CHARGE	PSM (726) WBVTR2 CONTROL REVERSED	PSM (727) PRM ON	PSM (730) RBV #2 TEM ENABLE	PSM (731) RBV OFF	PSM (732) SOLENOID 3 ON	ISM (733) SWITCH PAYLOAD REGULATOR	ISM (734) ENABLE SCAN & SELECT B	ISM (735) SPARE 4 SET	PSM (736) SPARE 2 RESET	ISM (737) APU POWER OFF
740	MMCA (740) ROLL COIL IN	PSM (741) INHIBIT DATA TO MSS FILTER A	MMCA (742) POLARITY POSITIVE	PSM (743) SUMMED DATA TO WBPA 2	MMCA (744) CAP HIGH	PSM (745) SOLENOIDS OFF	PSM (746) ORBIT ADJUST ON (2)	PSM (747) RBV ON (BOTH)	PSM (750) PRM OFF (1)	PSM (751) #2 BOT/EOT LOGIC DISABLE	PSM (752) SPARE 1 RESET	PSM (753) SPARE 2 SET	ISM (754) ENABLE WBPA (RED)	ISM (755) ENABLE USB XMTR/ WBPA TIMER SIGNAL	ISM (756) COMP LOAD 7 ON	ISM (757) DISABLE USB XMTRS
760	PSM (760) INHIBIT DATA TO MSS FILTER B	MMCA (761) ROLL COIL OUT	MMCA (762) CAP LOW	MMCA (763) POLARITY NEGATIVE	PSM (764) ORBIT ADJUST OFF	MMCA (765) POWER OFF	PSM (766) PAYLOADS OFF	ISM (767) PRM FUSE TAP OFF	PSM (770) RBV #1 TEM ENABLE	PSM (771) PRM OFF (2)	ISM (772) DISABLE USB XMTR WPBA TIMER SIGNAL	ISM (773) COMP LOAD 8 ON	ISM (774) ATTITUDE SENSOR POWER OFF	ISM (775) ENABLE USB XMTRS (PRI)	ISM (776) ENABLE WBPA (PRI)	

COMMAND DESIGNATION	CIU COMMAND
CA00 (1601)a	SWITCH S/C REGULATOR
CA01 (1621)a	CIU CHANNEL B OFF
CA10 (1641)a	CIU CHANNEL B ON SWITCH SYNCHRONIZER COMMAND LINKS
CA11 (1661)a	COMMAND CLOCK PSEUDOSECS ON ECAM OUTPUT DISABLE
CB00 (0501)a	SWITCH S/C REGULATOR
CB01 (0521)a	CIU CHANNEL A OFF
CB10 (0541)a	CIU CHANNEL A ON SWITCH SYNCHRONIZER COMMAND LINKS
CB11 (0561)a	COMMAND CLOCK PSEUDOSECS ON ECAM OUTPUT DISABLE

Command Matrix

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LANDSAT 4 COMMAND LIST

17MAR77
REVISION B 17FEB78
REVISION C 27FEB78

EXTRACTED FROM COMMAND MATRIX (DWG.47J222909AB REVISION B DATED10/04/77)
(AN 1 THRU 6 INCORPORATED)

FIELD LEGEND:
1-LANDSAT 1,2,C:
3-COMMAND NUMBER
8-SUBSYSTEM
17-COMMAND NAME
53-COMMAND COMPLEMENT(S),IF ANY:
73-COMMAND STATUS:
  -SR,REMOTE SITE RESTRICTED:
  -SC,REMOTE SITE CRITICAL:
  -OC,OPERATIONS CONTROL CENTER CRITICAL:

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L	CMD	SUBSYST	COMMAND NAME	COMPLEMENT COMMAND	STATUS
C	000	CLOCK	SPARE		
C	001	CLOCK	PRIMARY COMSTOR ONSFILL	003,005,006	
C	002	CLOCK	SPARE		
C	003	CLOCK	PRIMARY COMSTORE VERIFY	001,005,006	SC
C	004	CLOCK	PRIMARY COMSTOR COPY		
C	005	CLOCK	PRIMARY COMSTOR OFF	001	SC-OC
C	006	CLOCK	PRIMARY COMSTOR ACTIVATE	001,003,005	SC
C	007	CLOCK	SERIAL DATA TRANSFER ON		SC
C	010	CLOCK	COMMAND EXECUTION COUNTER RESET		
C	011	CLOCK	SELECT PRIMARY MATRIX DECODER	031	SC
C	012	CLOCK	SELECT PRIMARY MATRIX A DRIVERS	032	SC
C	013	CLOCK	SELECT PRIMARY MATRIX B DRIVERS	033	SC
C	014	CLOCK	SELECT PRIMARY OSCILLATOR	034	SC-OC
C	015	CLOCK	SELECT PRIMARY FREQ GENERATOR	035	SC-OC
C	016	CLOCK	SPARE		
C	017	CLOCK	LOAD TIME CODE		SC-OC
C	020	CLOCK	TURN NON-KEYED RS/CSMDEC OFF	EA_{11},CB_{11}	SC-OC
C	021	CLOCK	REDUNDANT COMSTOR ONSFILL	023,025,026	
C	022	CLOCK	SPARE		
C	023	CLOCK	REDUNDANT COMSTOR VERIFY	021,025,026	SC
C	024	CLOCK	REDUNDANT COMSTOR COPY		
C	025	CLOCK	REDUNDANT COMSTOR OFF	021	SC-OC
C	026	CLOCK	REDUNDANT COMSTOR ACTIVATE	021,023,025	SC
C	027	CLOCK	SPARE		
C	030	CLOCK	SPARE		
C	031	CLOCK	SELECT REDUNDANT MATRIX DECODER	011	SC

C 032	CLOCK	SELECT REDUNDANT MATRIX A DRIVERS	012	SC
C 033	CLOCK	SELECT REDUNDANT MATRIX B DRIVERS	013	SC
C 034	CLOCK	SELECT REDUNTANT OSCILLATOR	014	SC-DC
C 035	CLOCK	SELECT REDUNTANT FREQ GENERATOR	015	SC-DC
C 036	CLOCK	SPARE		
C 037	CLOCK	SPARE		
C 040	ACS	PNEUMATICS ENABLE	061	SC-DC
C 041	ACS	0.3 DEG YAW POS BIAS ENABLE	060	SC-DC
C 042	ACS	PNEUMATICS INTERLOCK BYPASS DISABLE	063	SC-DC
C 043		BLANK		
C 044	ACS	PNEU LOW VOLTAGE INTERLOCK RESET		SC-DC
C 045	ACS	DIFF TACH DISABLE	064	SC-DC
C 046	WBPA 2	POWER ON	067	SC
C 047	WBPA 2	SELECT 10 WATT OUTPUT	106	SC-DC
C 050	APU	STANDBY MODE	071	SC-DC
C 051	ECAM	ECAM LOAD	065	SC
C 052		BLANK		
C 053	MSS	SYSTEM A ON	073	SC
C 054	MSS	SELECT BAND 1 HIGH VOLTAGE A	075	
C 055	MSS	SELECT BAND 2 HIGH VOLTAGE A	074	
C 056	MSS	SELECT BAND 3 HIGH VOLTAGE A	077	
C 057	MSS	BAND 1 ON	076	
C 060	ACS	0.3 DEG YAW POS BIAS DISABLE	041	SC-DC
C 061	ACS	PNEUMATICS DISABLE	040	SC-DC
C 062		BLANK		
C 063	ACS	PNEUMATICS INTERLOCK BYPASS ENABLE	042	SC-DC
C 064	ACS	DIFF TACH ENABLE	045	SC-DC
C 065	ECAM	ECAM EXECUTE	051	SC
C 066		BLANK		
C 067	WBPA 2	POWER OFF	046	
C 070	ALC	MSS MAG COMP OFF	111	SC
C 071	APU	NORMAL MODE	050	
C 072	MSS	SYSTEM B ON	073	SC-DC
C 073	MSS	SYSTEM OFF	053, 072	
C 074	MSS	SELECT BAND 2 HIGH VOLTAGE B	055	SC-DC
C 075	MSS	SELECT BAND 1 HIGH VOLTAGE B	054	SC-DC
C 076	MSS	BAND 1 OFF	057	SC-DC
C 077	MSS	SELECT BAND 3 HIGH VOLTAGE B	056	SC-DC
C 100	ACS	DIFF TACH NORMAL GAIN	121	SC-DC
C 101	ACS	0.1 DEG YAW POS BIAS ENABLE	120	SC-DC
C 102	ACS	RLNA INTO YAW DISABLE	123	SC-DC
C 103	ACS	2.9 DEG PITCH POS BIAS ENABLE	122	SC-DC
C 104	ACS	PITCH MOMENTUM BIAS MODE DISABLE	125	SC-DC
C 105	ECAM	ECAM RUN A	164	SC
C 106	WBPA 2	SELECT 20 WATT OUTPUT	047	
C 107	USB XPDR	BYPASS AUX OSC	150	
C 110	USB XPDR	SELECT XMIR B	126	SC
C 111	ALC	MSS MAG COMP ON	070	SC
C 112	MSS	HIGH VOLTAGE ON		SC
C 113	MSS	BAND 2 ON	132	
C 114	MSS	BAND 3 ON	135	
C 115	MSS	BAND 4 ON	134	
C 116	MSS	BAND 5 ON	137	
C 117	MSS	SELECT CALIBRATION LAMP A	136	
C 120	ACS	0.1 YAW POS BIAS DISABLE	101	SC-DC
C 121	ACS	DIFF TACH HIGH GAIN	100	SC-DC
C 122	ACS	2.9 DEG PITCH BIAS DISABLE	103	SC-DC
C 123	ACS	RLNA INTO YAW ENABLE	102	SC-DC

C 124	ACS	NEGATIVE PITCH POSITION BIAS	145		
C 125	ACS	PITCH MOMENTUM BIAS MODE ENABLE	104		SC-OC
C 126	USB XPDR	SELECT XMIR A	110		SC
C 127	USB XPDR	RANGING ON	146		
C 130	USB XPDR	MODULATION INPUT CROSSED	147		SC-OC
C 131		BLANK			
C 132	MSS	BAND 2 OFF	113		SC-OC
C 133	MSS	DOOR MOTOR POWER OFF	637		
C 134	MSS	BAND 4 OFF	115		SC-OC
C 135	MSS	BAND 3 OFF	114		SC-OC
C 136	MSS	SELECT CALIBRATION LAMP B	117		SC-OC
C 137	MSS	BAND 5 OFF	116		SC-OC
C 140	ACS	ROLL UNLOAD DISABLE	161		SC-OC
C 141	ACS	NEGATIVE YAW POSITION BIAS	160		
C 142	ACS	YAW WHEEL DISABLE	163		SR-OC
C 143		BLANK			
C 144	ACS	PITCH UNLOAD DISABLE	165		SC-OC
C 145	ACS	POSITIVE PITCH POSITION BIAS	124		
C 146	USB XPDR	RANGING OFF	127		
C 147	USB XPDR	MODULATION INPUT NORMAL	130		
C 150	USB XPDR	ENABLE AUX OSC	107		
C 151		BLANK			
C 152	MSS	ROTATING SHUTTER DRIVER ON	173		
C 153	MSS	SCAN MONITOR ON	172		
C 154	MSS	BAND 1 HIGH GAIN	175		
C 155	MSS	BAND 2 HIGH GAIN	174		
C 156	MSS	CALIBRATION LAMP ON	177		
C 157	MSS	BAND 1 HIGH VOLTAGE ON	176		
C 160	ACS	POSITIVE YAW POS BIAS	141		
C 161	ACS	ROLL UNLOAD ENABLE	140		
C 162	ACS	PNEUMATICS MOMENTARY ENABLE			SC-OC
C 163	ACS	YAW WHEEL ENABLE	142		
C 164	ECAM	ECAM RUN B	105		SC
C 165	ACS	PITCH UNLOAD ENABLE	144		
C 166	VHF XMTR	PLAYBACK MBTR 2	207,251		SC-OC
C 167	VHF XMTR	POWER #1 OFF	206		SC-OC
C 170	VHF XMTR	POWER #2 ON	211		
C 171	VHF XMTR	PLAYBACK OVERRIDE OFF	230		
C 172	MSS	SCAN MONITOR OFF	153		SC-OC
C 173	MSS	ROTATING SHUTTER DRIVER OFF	152		
C 174	MSS	BAND 2 LOW GAIN	155		
C 175	MSS	BAND 1 LOW GAIN	154		
C 176	MSS	BAND 1 HIGH VOLTAGE OFF	157		SC-OC
C 177	MSS	CALIBRATION LAMP OFF	156		SC-OC
C 200	ACS	ORBIT ADJUST MODE ENABLE	221		SR-OC
C 201	ECAM	ECAM ON	220		SC
C 202	ACS	RMP A ENABLE	223		SC-OC
C 203	ACS	400 RPM INTERLOCK ENABLE	222		
C 204	ACS	YAW ACQUISITION MODE	225		SR-OC
C 205	RSM	VTR 1 BYPASS ON	224		SC
C 206	VHF XMTR	POWER #1 ON	167		
C 207	VHF XMTR	REAL TIME MODE	166,251		
C 210	VHF XMTR	LOW POWER MODE	227		
C 211	VHF XMTR	POWER #2 OFF	170		SC-OC
C 212	MSS	BAND 2 HIGH VOLTAGE ON	233		
C 213	MSS	BAND 3 HIGH VOLTAGE ON	232		
C 214	MSS	SELECT SHUTTER MONITOR SOURCE A	235		
C 215	MSS	DOOR DIRECTION OPEN	234		SC

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C	216	MSS	DOOR OVERRIDE ACTIVATE	473	SC-OC
C	217		BLANK		
C	220	ECAM	ECAM OFF	401	SC
C	221	ACS	ORBIT ADJUST MODE DISABLE	400	SC-OC
C	222	ACS	400 RPM INTERLOCK DISABLE	403	SC-OC
C	223	ACS	RMP B ENABLE	402	SC-OC
C	224	RSM	VTR 1 POWER BYPASS OFF	405	SC
C	225	ACS	YAW NORMAL MODE	404	
C	226		BLANK		
C	227	VHF XMTR	HIGH POWER MODE	410	
C	230	VHF XMTR	PLAYBACK OVERRIDE ON	471	
C	231	VHF XMTR	SELECT XMTR A	450	
C	232	MSS	BAND 3 HIGH VOLTAGE OFF	413	SC-OC
C	233	MSS	BAND 2 HIGH VOLTAGE OFF	412	SC-OC
C	234	MSS	DOOR DIRECTION CLOSE	415	SC
C	235	MSS	SELECT SHUTTER MONITOR SOURCE B	414	SC-OC
C	236		BLANK		
C	237	MSS	DOOR MOTOR POWER ON	433	SC
C	240		BLANK		
C	241	RSM	VTR 2 POWER BYPASS ON	420	SC
C	242		BLANK		
C	243		BLANK		
C	244	ACS	LEFT SAD NORMAL RATE	425	
C	245	ECAM	INH STOR CMDS/ZERO TIME		SC-OC
C	246	POWER	BATTERY #1 OFF	453	SC-OC
C	247	ACS	RMP B HEATER OFF	409	
C	250	VHF XMTR	SELECT XMTR B	431	SC-OC
C	251	VHF XMTR	PLAYBACK MTR 1	466,507	SC-OC
C	252	MSS	DOOR MOVE		SC-OC
C	253	MSS	BAND 5A GAIN STEP		SC-OC
C	254	MSS	DOOR HOLD ON	475	SC
C	255	MSS	SELECT SCAN MONITOR SOURCE A	474	
C	256	MSS	SCAN MIRROR INHIBIT	477	SC-OC
C	257	MSS	MUX NORMAL	476	
C	260	TMP	A/D A ON	501	
C	261	TMP	OUTPUT CIRCUIT A ON	502	
C	262	TMP	SELECT FORMAT 1	503	SC-OC
C	263		BLANK		
C	264	POWER	BATTERY #5 OFF	453	SC-OC
C	265	POWER	BATTERY #6 OFF	453	SC-OC
C	266	ACS	RMP B OFF	447,504,505,530	SC-OC
C	267	POWER	BATTERY #4 OFF	453	SC-OC
C	270	ACS	RIGHT SAD DISABLE	411	SC-OC
C	271	ACS	RMP A MOTOR START	407,526,570,610	SC-OC
C	272	MSS	BAND 5B GAIN STEP		SC-OC
C	273	MSS	DOOR OVERRIDE RESET	416	SC
C	274	MSS	SELECT SCAN MONITOR SOURCE B	455	SC-OC
C	275	MSS	DOOR HOLD OFF	454	SC
C	276	MSS	MUX INHIBIT	457	SC-OC
C	277	MSS	SCAN MIRROR NORMAL	456	
C	300	TMP	CONTROL LOGIC A ON	521	
C	301	TMP	A/D B ON	460	SC-OC
C	302	TMP	OUTPUT CIRCUIT B ON	461	SC-OC
C	303	TMP	SELECT FORMAT 0	462	SC-OC
C	304	ACS	RMP B MOTOR ON	466	SC-OC
C	305	ACS	RMP B HEATER & ELEC ON	466	SC-OC
C	306	POWER	BATTERY #7 OFF	453	SC-OC
C	307	ACS	RMP A OFF	471,526	SC-OC

C 310	POWER	BATTERY #3 OFF	353	SC-DC
C 311	ACS	RIGHT SAD ENABLE	270	
C 312	MSS	SCAN MIRROR POWER LINE 1	356	
C 313	MSS	DOOR OVERRIDE SAFETY *SAFE	334	SC
C 314	MSS	MID SCAN CODE ON	335	
C 315	MSS	MUX COMPRESSION MODE	333	
C 316	PSM	MSS HEATER ON	337	SC-DC
C 317	MSS	RADIATION COOLER POWER ON	332	SC
C 320	PSM	VTR 2 POWER BYPASS OFF	241	SC
C 321	TMP	CONTROL LOGIC B ON	300	SC-DC
C 322		BLANK		
C 323		BLANK		
C 324	ECAM	ECAM OUTPUT ENABLE		SC
C 325	ACS	LEFT SAD HIGH RATE	244	SC-DC
C 326	ACS	RMP A ON	307	SC-DC
C 327	POWER	BATTERY #8 OFF	353	SC-DC
C 330	ACS	RMP B LOWER MOTOR VOLTAGE	266	SC-DC
C 331	POWER	BATTERY #4 OFF	353	SC-DC
C 332	MSS	RADIATION COOLER POWER OFF	317	SC
C 333	MSS	MUX LINEAR MODE	315	
C 334	MSS	DOOR OVERRIDE SAFETY ARM	313	SC-DC
C 335	MSS	MID SCAN CODE OFF	314	
C 336	MSS	SCAN MIRROR POWER LINE 2	312	SC-DC
C 337	PSM	MSS HEATER OFF	316	SC
C 340	TMP	POWER A ON/B OFF	361,403	SC-DC
C 341	TMP	BI LEVEL MUX A ON	362	
C 342	TMP	ANALOG MUX A ON	363	
C 343		BLANK		
C 344	ACS	LEFT SAD DISABLE	365	SC-DC
C 345	PSM	SPARE 3 RESET	360	
C 346	POWER	TRICKLE CHARGE NORMAL	367	SC-DC
C 347	PSM	ENABLE USBX OFF	364	SC-DC
C 350	DCS	RCVR 2 ON	406	SC-DC
C 351	PSM	RBV PRIMARY CONTROL ENABLE	424	
C 352	RBV	CATHODE REACTIVATION ON	371	SR-DC
C 353	POWER	ALL BATTERIES ON (PRI)		SC-DC
C 354	POWER	SHUNT LOAD A OFF	437	SC-DC
C 355	POWER	ALL COMP LOADS OFF (PRI)		SC-DC
C 356	POWER	AUX LOAD #1 ON	374,413	
C 357	POWER	AUX LOAD #2 ON	374,413	
C 360	PSM	SPARE 3 SET	345	
C 361	TMP	POWER A OFF	340	SC-DC
C 362	TMP	BI LEVEL MUX B ON	341	SC-DC
C 363	TMP	ANALOG MUX BI ON	342	SC-DC
C 364	PSM	DISABLE USBX OFF	347	
C 365	ACS	LEFT SAD ENABLE	344	
C 366	DCS	RCVR 1 ON	407	
C 367	POWER	TRICKLE CHARGE OVERRIDE	346	SC-DC
C 370	ACS	RMP A HEATER ON	307,271	SC-DC
C 371	RBV	CATHODE REACTIVATION OFF	352	
C 372	RBV	REPHASE FROM VTR 1	473	
C 373	POWER	VERIFY TICK	457	
C 374	POWER	ALL AUX LOADS OFF (PRI)		
C 375	POWER	SHUNT LOAD B OFF	437	SC-DC
C 376	POWER	COMP LOAD #1 ON	355	
C 377	POWER	COMP LOAD #2 ON	355	
C 400		BLANK		
C 401	TMP	ANALOG MUX A2 ON	420	

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C 402	TMP	SERIAL MUX A ON	421	
C 403	TMP	POWER B ON/A OFF	340,422	SC-DC
C 404	ACS	RIGHT SAD HIGH RATE	425	SC-DC
C 405		BLANK		
C 406	DCS	RCVR 2 OFF	350	
C 407	DCS	RCVR 1 OFF	366	SC-DC
C 410	ACS	RMP A LOWER MOTOR VOLTAGE	271	SC-DC
C 411	RBV	CCC POWER ON	432	SC-DC
C 412	RBV	APERTURE CORRECTOR IN	431	
C 413	POWER	ALL AUX LOADS OFF (B/U)		
C 414	POWER	COMP LOAD 3 ON	355	
C 415	POWER	SHUNT LOAD C OFF	437	SC-DC
C 416	POWER	COMP LOAD 4 ON	355	
C 417	POWER	COMP LOAD 5 ON	355	
C 420	TMP	ANALOG MUX B2 ON	401	SC-DC
C 421	TMP	SERIAL MUX B ON	402	SC-DC
C 422	TMP	POWER B OFF	403	SC-DC
C 423		BLANK		
C 424	PSM	RBV PRIMARY CONTROL DISABLE	351	SC-DC
C 425	ACS	RIGHT SAD NORMAL RATE	404	
C 426	WBVTR 1	RECORD	447,464,465,504,505	
C 427	RBV	SINGLE CYCLE	470	SC-DC
C 430	RBV	START PREPARE		SC-DC
C 431	RBV	APERTURE CORRECTOR OUT	412	
C 432	RBV	CCC POWER OFF	411	SC-DC
C 433	RBV	CAMERA 1 ON	911	SC-DC
C 434	POWER	COMP LOAD 6 ON	355	
C 435	POWER	AUX LOAD 3 ON	374,413	
C 436	POWER	AUX LOAD 4 ON	374,413	SC
C 437	POWER	ALL SHUNT LOADS ON		
C 440		BLANK		
C 441		BLANK		
C 442		BLANK		
C 443		BLANK		
C 444	WBVTR 1	VOLTAGE PROTECT RELAY RESET		SC-DC
C 445	WBVTR 1	RECORD CURRENT ADJUST		SC-DC
C 446	WBVTR 1	BOT/EOT LOGIC ENABLE	672	SC-DC
C 447	WBVTR 1	PLAYBACK	426,464,465,504,505	
C 450	RBV	EXPOSURE 1	451,452,453,454	SC-DC
C 451	RBV	EXPOSURE 2	450,452,453,454	SC-DC
C 452	RBV	EXPOSURE 5	450,451,453,454	SC-DC
C 453	RBV	EXPOSURE 3	450,451,452,454	SC-DC
C 454	RBV	EXPOSURE 4	450,451,452,453	SC-DC
C 455	POWER	AUX LOAD 5 ON	374,413	SC
C 456	POWER	SHUNT LOAD D OFF	437	SC-DC
C 457	POWER	VERIFY LOCK	373	
C 460		BLANK		
C 461		BLANK		
C 462		BLANK		
C 463		BLANK		
C 464	WBVTR 1	RBV STANDBY	426,447,464,504,505	
C 465	WBVTR 1	FAST REWIND	426,447,464,504,505	
C 466	WBFM	SELECT VCO B_1	965	
C 467	WBVTR 1	VOLTAGE PROTECT ENABLE	906	
C 470	RBV	CONTINUOUS CYCLE	427	SC-DC
C 471	RBV	CAMERA 2 ON	910	SC-DC
C 472	RBV	START CALIB		SC-DC
C 473	RBV	REPHASE FROM VTR 2	372	

C 474	WBFM	AUX DATA TO RBV FILTER A	703	
C 475	WBFM	DATA TO MSS FILTER B	760	
C 476	WBFM	RT DATA TO RBV FILTER B	722	
C 477	WBFM	ENABLE RBV FILTER B	866	
C 500		BLANK		
C 501		BLANK		
C 502		BLANK		
C 503		BLANK		
C 504	WBVTR 1	FAST FORWARD	426,447,464,465,505	
C 505	WBVTR 1	MSS STANDBY	426,447,464,465,504	
C 506	WBVTR 1	VOLTAGE PROTECT DISABLE	467	SC-DC
C 507	WBVTR 1	LAP		SR-DC
C 510	RBV	CAMERA 2 OFF	471	SC-DC
C 511	RBV	CAMERA 1 OFF	433	SC-DC
C 512	POWER	ALL BATT ON (B/U)		SC-DC
C 513	WBVTR 2	RECORD	934,551,552,571,572	
C 514	WBFM	DATA TO MSS FILTER A	741	
C 515	WBFM	RT DATA TO RBV FILTER A	703	
C 516	WBFM	DATA TO MSS FILTER B	760	
C 517	WBFM	WBVTR 1 DATA TO RBV FILTER B	722	
C 520		BLANK		
C 521		BLANK		
C 522		BLANK		
C 523		BLANK		
C 524	WBFM	SELECT VCO A_1	947	
C 525	WBFM	INVERTER A POWER ON	966	
C 526	WBFM	ENABLE MODULATOR A AFC	945	
C 527	WBFM	INVERTER B POWER OFF	950	
C 530	WBFM	DISABLE MODULATOR B AFC	967	SC-DC
C 531	WBFM	WBVTR 2 DATA TO RBV FILTER B	722	
C 532	WBVTR 2	RECORD CURRENT ADJUST		SC-DC
C 533	WBVTR 2	BOT/EOT LOGIC ENABLE	751	SC-DC
C 534	WBVTR 2	PLAYBACK	913,551,552,571,572	
C 535	WBFM	DATA TO MSS FILTER A	741	
C 536	WBFM	WBVTR 1 DATA TO RBV FILTER A	703	
C 537	WBFM	WBVTR 1 DATA TO MSS FILTER B	760	
C 540	WBPA 1	POWER ON	961	SC
C 541	WBPA 1	SELECT 10 WATT OUTPUT	600	SC-DC
C 542	WBTR 2	PLAYBACK MODE	601,620	
C 543	WBTR 1	RECORD MODE	902,621	
C 544	WBFM	ENABLE RBV FILTER A	925	
C 545	WBFM	DISABLE MODULATOR A AFC	926	SC-DC
C 546	WBFM	SELECT RBV BIAS A	964	
C 547	WBFM	SELECT VCO A_2	924	SC-DC
C 550	WBFM	INVERTER B POWER ON	927	
C 551	WBVTR 2	RBV STANDBY	913,534,552,571,572	
C 552	WBVTR 2	FAST REWIND	913,534,551,571,572	
C 553	WBVTR 2	VOLTAGE PROTECT RELAY RESET		SC-DC
C 554	WBVTR 2	VOLTAGE PROTECT ENABLE	973	
C 555	WBFM	ENABLE MSS FILTER A	966	
C 556	WBFM	WBVTR 1 DATA TO MSS FILTER A	741	
C 557	WBFM	WBVTR 2 DATA TO RBV FILTER A	703	
C 560	PSM	8RBIT ADJUST TIMER ENABLE	603	
C 561	WBPA 1	POWER OFF	940	
C 562	WBTR 1	POWER OFF	943,621	
C 563	PSM	WBVTR SEARCH TRACK SWITCHED	631	SC-DC
C 564	WBFM	SELECT RBV BIAS B	946	
C 565	WBFM	SELECT VCO B_2	966	SC-DC

C 566	WBFM	INVERTER A POWER OFF	925	
C 567	WBFM	ENABLE MODULATOR B AFC	930	
C 570	WBFM	WBVTR 2 DATA TO MSS FILTER B	760	
C 571	WBVTR 2	FAST FORWARD	913,534,551,552,572	
C 572	WBVTR 2	MSS STANDBY	913,534,551,552,571	
C 573	WBVTR 2	VOLTAGE PROTECT DISABLE	954	SC-DC
C 574	WBVTR 2	LAP		SR-DC
C 575	WBFM	AUX DATA TO RBV FILTER B	722	
C 576	WBFM	ENABLE MSS FILTER B	625	
C 577	WBFM	WBVTR 2 DATA TO MSS FILTER A	741	
C 600	WBPA 1	SELECT 20 WATT OUTPUT	941	
C 601	NBTR 2	RECORD MODE	942,620	
C 602	ACS	PITCH POS BIAS ARM	623	SC-DC
C 603	PSM	ORBIT ADJUST TIMER DISABLE	960	SC-DC
C 604	PMP	SELECT NBIR 2	646	
C 605	PMP	MODULATOR A ON	626	
C 606	PMP	SELECT NBIR	664	
C 607	PSM	WBVTR 1 ON (PRIMARY)	651,766	
C 610	PSM	MSS ENABLE (PRI)	647	SC
C 611	POWER	ALL COMM LDS OFF (B/U)		SC-DC
C 612	PSM	RBV #1 TEM DISABLE	770	SC-DC
C 613	ISM	DISABLE SELECTED SCANNER	636,734	SC-DC
C 614	ISM	SWITCHED TELEMETRY POWER ON	673	
C 615	ISM	ORBIT ADJUST THRUSTER HEATER ON	657	SC-DC
C 616	ISM	MSFN TO CIU A/STADAN TO CIU B	CA10,CB10,715	SC-DC
C 617	ISM	DISABLE RSM RELAY BUS	655	SC-DC
C 620	NBTR 2	POWER OFF	942,601	
C 621	NBTR 1	PLAYBACK MODE	943,562	
C 622	PSM	PRM FUSE TAP ON	767	SC-DC
C 623	ACS	PITCH POS BIAS DISARM	602	
C 624	PMP	SELECT WBVTR 1	645	
C 625	PSM	INHIBIT WBFM RBV A/MSS B FILTERS	944,576	
C 626	PMP	MODULATOR A OFF	605	
C 627	RSM	ORBIT ADJUST ON (1)	745,764	SR-DC
C 630	PSM	WBVTR 1 CONTROL NORMAL	643	
C 631	PSM	WBVTR SEARCH TRACK NORMAL	963	
C 632	PSM	MSS ENABLE (BOTH)	647	SC
C 633	ISM	RIGHT SAD UNFUSED	674	SC-DC
C 634	ISM	CMD CLK RELAYS ON 5A FUSE	653	SC-DC
C 635	ISM	SEPERATION SWITCH BYPASS		
C 636	ISM	ENABLE SCAN & SELECT A	613,734	SC-DC
C 637	ISM	SPARE 4 RESET	735	
C 640	ACS	2.0 DEG PITCH POS BIAS ENABLE	661	SC-DC
C 641	PSM	INVERTER A PWR TO WBFM	660	
C 642	ACS	0.6 DEG PITCH POS BIAS ENABLE	663	SC-DC
C 643	RSM	WBVTR 1 CONTROL REVERSED	630	SC-DC
C 644	PMP	MODULATOR B ON	665	
C 645	PMP	SELECT WBVTR 2	624	
C 646	PMP	SELECT NBIR 1	604	
C 647	PSM	MSS DISABLE	610,632,662	SC-DC
C 650	PSM	WBVTR 2 ON (PRIMARY)	712,766	
C 651	PSM	WBVTR 1 OFF	607	
C 652		BLANK		
C 653	ISM	CMD CLK RELAYS ON 1A FUSE	634	
C 654	ISM	LEFT SAD UNFUSED	713	SC-DC
C 655	ISM	ENABLE RSM RELAY BUS	617	
C 656	ISM	APU POWER ON	737	
C 657	ISM	ORBIT ADJUST THRUSTER HEATER OFF	615	SC-DC

C 660	PSM	INVERTER B PWR TO WBFM	641	
C 661	ACS	2.0 DEG PITCH POS BIAS DISABLE	640	SC-BC
C 662	PSM	MSS ENABLE (RED)	647	SC
C 663	ACS	0.6 DEG PITCH POS BIAS DISABLE	642	SC-BC
C 664	PMP	SELECT WBVTR	606	SC-BC
C 665	PMP	MODULATOR B OFF	644	
C 666	PSM	INHIBIT WBFM RBV B/MSS A FILTERS	471,555	
C 667	PSM	RBV ON (PRIMARY)	731,766	SC
C 670	PSM	SOLENOID 1 ON	745,764	SR-BC
C 671	PSM	WBVTR 2 CONTROL NORMAL	626	
C 672	PSM	WBVTR#1 BOT/EOT LOGIC DISABLE	646	SC-BC
C 673	ISM	SWITCHED TELEMETRY POWER OFF	614	SC-BC
C 674	ISM	RIGHT SAD FUSED	633	
C 675	ISM	LOCK SSM	714	SC-BC
C 676	ISM	ENABLE USB XMTRS (RED)	757	
C 677	PSM	SPARE 1 SET	652	
C 700	MMCA	POWER ON	765	SC-BC
C 701	PSM	ENABLE PAYLOAD TIMER SIGNAL	720	
C 702	MMCA	PITCH COIL OUT	721	
C 703	PSM	INHIBIT DATA TO RBV FILTER A	474,515,536,557	
C 704	MMCA	YAW COIL OUT	723	
C 705	PSM	PRIME DATA TO WBPA 1 /WBPA 2	724,743	
C 706	MMCA	CAP DUMP	725	SC-BC
C 707	PSM	RBV #2 TEM DISABLE	730	SC-BC
C 710	PSM	RBV ON (REDUNDANT)	731,766	SC-BC
C 711	PSM	SOLENOID 2 ON	745,764	SR-BC
C 712	PSM	WBVTR 2 OFF	650	
C 713	ISM	LEFT SAD FUSED	654	
C 714	ISM	UNLOCK SSM	615	SC-BC
C 715	ISM	MSFN TO CIU B/STADAN TO CIU A	CA10,CB10,616	SC-BC
C 716	ISM	ATTITUDE SENSOR POWER ON	774	
C 717	ISM	WBTR BOT/EOT LOGIC DISABLE ARM		SC-BC
C 720	RSM	DISABLE PAYLOAD TIMER SIGNAL	701	SC-BC
C 721	MMCA	PITCH COIL IN	702	
C 722	PSM	INHIBIT DATA TO RBV FILTER B	476,517,531,575	
C 723	MMCA	YAW COIL IN	704	
C 724	RSM	SUMMED DATA TO WBPA 1	705	SC-BC
C 725	MMCA	CAP CHARGE	706	SC-BC
C 726	PSM	WBVTR 2 CONTROL REVERSED	671	SC-BC
C 727	RSM	PRM ON	750,771	
C 730	RSM	RBV #2 TEM ENABLE	707	
C 731	RSM	RBV OFF	667,710,747	
C 732	PSM	SOLENOID 3 ON	745,764	SR-BC
C 733	ISM	SWITCH PAYLOAD REGULATOR		SC-BC
C 734	ISM	ENABLE SCAN & SELECT B	613,636	SC-BC
C 735	ISM	SPARE 4 SET	637	
C 736	PSM	SPARE 2 RESET	753	
C 737	ISM	APU POWER OFF	656	SC-BC
C 740	MMCA	ROLL COIL IN	761	
C 741	PSM	INHIBIT DATA TO MSS FILTER A	514,535,556,577	
C 742	MMCA	POLARITY POSITIVE	763	
C 743	PSM	SUMMED DATA TO WBPA 2	705	SC-BC
C 744	MMCA	CAP HIGH	762	
C 745	PSM	SOLENOIDS OFF	627	
C 746	PSM	ORBIT ADJUST ON (2)	745,764	SR-BC
C 747	PSM	RBV ON (BOTH)	731,766	SC-BC
C 750	PSM	PRM OFF (1)	727	SC-BC
C 751	PSM	WBVTR#2 BOT/EOT LOGIC DISABLE	933	SC-BC

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C 752	PSM	SPARE 1 RESET	677	
C 753	PSM	SPARE 2 SET	736	
C 754	ISM	ENABLE WBPA (RED)		SC-8C
C 755	ISM	ENABLE USB XMTR/WBPA TIMER SIGNAL	772	
C 756	ISM	COMP LOAD 7 ON	355	
C 757	ISM	DISABLE USB XMTRS	676,775	
C 760	PSM	INHIBIT DATA TO MSS FILTER B	475,516,537,570	
C 761	MMCA	ROLL COIL OUT	740	
C 762	MMCA	CAP LOW	744	
C 763	MMCA	POLARITY NEGATIVE	742	
C 764	PSM	ORBIT ADJUST OFF	627,746	
C 765	MMCA	POWER OFF	700	
C 766	PSM	PAYLOADS OFF	650,667,707,710	
C 767	PSM	PRM FUSE TAP OFF	622	SC-8C
C 770	PSM	RBV #1 TEM ENABLE	612	
C 771	PSM	PRM OFF (2)	727	SC-8C
C 772	ISM	DISABLE USB XMTR WBPA TIMER SIGNAL	755	SC-8C
C 773	ISM	COMP LOAD 8 ON	355	
C 774	ISM	ATTITUDE SENSOR POWER OFF	716	SC-8C
C 775	ISM	ENABLE USB XMTRS (PRI)	757	
C 776	ISM	ENABLE WBPA (PRI)		SC-8C
C 777		BLANK		
C 780	CIU	SWITCH S/C REGULATOR (C_{A00})		SC-8C
C 781	CIU	CHANNEL B OFF (C_{A01})		SC-8C
C 782	CIU	CHANNEL B ON/SWITCH STADAN/MSFN EMU LINKS (C_{A10})		SC-8C
C 783	CIU	COMMAND CLOCK PS/CSMDECS ON EVAM OUTPUT DISABLE (C_{A11})		SC-8C
C 784	CIU	SWITCH S/C REGULATOR (C_{B00})		SC-8C
C 785	CIU	CHANNEL A OFF (C_{B01})		SC-8C
C 786	CIU	CHANNEL A ON/SWITCH STADAN/MSFN EMU LINKS (C_{B10})		SC-8C
C 787	CIU	COMMAND CLOCK PS/CSMDECS ON EVAM OUTPUT DISABLE (C_{B11})		SC-8C

17MAR77
REVISION B 17FEB78
REVISION C 27FEB78

*END

LANDSAT C COMMAND LIST

17MAR77
REVISION A 17FEB78
REVISION B 17FEB78
REVISION C 27FEB78

EXTRACTED FROM COMMAND MATRIX (DWG.#7J222909AB REVISION B DATED10/04/77)
(AN 1 THRU 6 INCORPORATED)

FIELD LEGEND.
1=LANDSAT 1,2,C.
3=COMMAND NUMBER
8=SUBSYSTEM
17=COMMAND NAME
53=COMMAND COMPLEMENT(S),IF ANY.
73=COMMAND STATUS.
=SR,REMOTE SITE RESTRICTED.
=SC,REMOTE SITE CRITICAL.
=OC,OPERATIONS CONTROL CENTER CRITICAL.

01000=ATTITUDE CONTROL SUBSYSTEM (COMMANDS)

L	CMD	SUBSYST	COMMAND NAME	COMPLEMENT COMMAND	STATUS
C	040	ACS	PNEUMATICS ENABLE	061	SC=OC
C	041	ACS	0.3 DEG YAW POS BIAS ENABLE	060	SC=OC
C	042	ACS	PNEUMATICS INTERLOCK BYPASS DISABLE	063	SC=OC
C	044	ACS	PNEU LOW VOLTAGE INTERLOCK RESET		SC=OC
C	045	ACS	DIFF TACH DISABLE	064	SC=OC
C	060	ACS	0.3 DEG YAW POS BIAS DISABLE	041	SC=OC
C	061	ACS	PNEUMATICS DISABLE	040	SC=OC
C	063	ACS	PNEUMATICS INTERLOCK BYPASS ENABLE	042	SC=OC
C	064	ACS	DIFF TACH ENABLE	045	SC=OC
C	100	ACS	DIFF TACH NORMAL GAIN	121	SC=OC
C	101	ACS	0.1 DEG YAW POS BIAS ENABLE	120	SC=OC
C	102	ACS	RLNA INTO YAW DISABLE	123	SC=OC
C	103	ACS	2.9 DEG PITCH POS BIAS ENABLE	122	SC=OC
C	104	ACS	PITCH MOMENTUM BIAS MODE DISABLE	125	SC=OC
C	120	ACS	0.1 YAW POS BIAS DISABLE	101	SC=OC
C	121	ACS	DIFF TACH HIGH GAIN	100	SC=OC
C	122	ACS	2.9 DEG PITCH BIAS DISABLE	103	SC=OC
C	123	ACS	RLNA INTO YAW ENABLE	102	SC=OC
C	124	ACS	NEGATIVE PITCH POSITION BIAS	145	
C	125	ACS	PITCH MOMENTUM BIAS MODE ENABLE	104	SC=OC
C	140	ACS	ROLL UNLOAD DISABLE	161	SC=OC
C	141	ACS	NEGATIVE YAW POSITION BIAS	160	

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C 142	AES	YAW WHEEL DISABLE	163	SR=0C
C 144	AES	PITCH UNLOAD DISABLE	165	SC=0C
C 145	AES	POSITIVE PITCH POSITION BIAS	124	
C 160	AES	POSITIVE YAW POS BIAS	141	
C 161	AES	ROLL UNLOAD ENABLE	140	
C 162	AES	PNEUMATICS MOMENTARY ENABLE		SC=0C
C 163	AES	YAW WHEEL ENABLE	142	
C 165	AES	PITCH UNLOAD ENABLE	144	
C 200	AES	ORBIT ADJUST MODE ENABLE	221	SR=0C
C 202	AES	RMP A ENABLE	223	SC=0C
C 203	AES	400 RPM INTERLOCK ENABLE	222	
C 204	AES	YAW ACQUISITION MODE	225	SR=0C
C 221	AES	ORBIT ADJUST MODE DISABLE	200	SC=0C
C 222	AES	400 RPM INTERLOCK DISABLE	203	SC=0C
C 223	AES	RMP B ENABLE	202	SC=0C
C 225	AES	YAW NORMAL MODE	204	
C 244	AES	LEFT SAD NORMAL RATE	325	
C 247	AES	RMP B HEATER OFF	305	
C 266	AES	RMP B OFF	247,304,305,330	SC=0C
C 270	AES	RIGHT SAD DISABLE	311	SC=0C
C 271	AES	RMP A MOTOR START	307,326,370,410	SC=0C
C 304	AES	RMP B MOTOR ON	266	SC=0C
C 305	AES	RMP B HEATER & ELEC ON	266	SC=0C
C 307	AES	RMP A OFF	271,326	SC=0C
C 311	AES	RIGHT SAD ENABLE	270	
C 325	AES	LEFT SAD HIGH RATE	244	SC=0C
C 326	AES	RMP A ON	307	SC=0C
C 330	AES	RMP B LOWER MOTOR VOLTAGE	266	SC=0C
C 344	AES	LEFT SAD DISABLE	365	SC=0C
C 365	AES	LEFT SAD ENABLE	344	
C 370	AES	RMP A HEATER ON	307,271	SC=0C
C 404	AES	RIGHT SAD HIGH RATE	425	SC=0C
C 410	AES	RMP A LOWER MOTOR VOLTAGE	271	SC=0C
C 425	AES	RIGHT SAD NORMAL RATE	404	
C 602	ACS	PITCH POS BIAS ARM	623	SC=0C
C 623	ACS	PITCH POS BIAS DISARM	602	
C 640	AES	2.0 DEG PITCH POS BIAS ENABLE	661	SC=0C
C 642	AES	0.6 DEG PITCH POS BIAS ENABLE	663	SC=0C
C 661	AES	2.0 DEG PITCH POS BIAS DISABLE	640	SC=0C
C 663	AES	0.6 DEG PITCH POS BIAS DISABLE	642	SC=0C

SEE INTERFACE SWITCHING MODULE (ISM)

02000=ORBIT ADJUST SUBSYSTEM (COMMANDS)

SEE INTERFACE SWITCHING MODULE (ISM)
SEE POWER SWITCHING MODULE (PSM)

03000=ATTITUDE MEASURMENT SENSOR SUBSYSTEM (COMMANDS)

SEE INTERFACE SWITCHING MODULE (ISM)

04000=MAGNETIC MOMENTS COMPENSATING ASSEMBLY (COMMANDS)

C 700	MMCA	POWER ON	765	SC=0C
C 702	MMCA	PITCH COIL OUT	721	

C 704	MMCA	YAW COIL OUT	723	
C 706	MMCA	CAP DUMP	725	SC-0C
C 721	MMCA	PITCH COIL IN	702	
C 723	MMCA	YAW COIL IN	704	
C 725	MMCA	CAP CHARGE	706	SC-0C
C 740	MMCA	ROLL COIL IN	761	
C 742	MMCA	POLARITY POSITIVE	763	
C 744	MMCA	CAP HIGH	762	
C 761	MMCA	ROLL COIL OUT	740	
C 762	MMCA	CAP LOW	744	
C 763	MMCA	POLARITY NEGATIVE	742	
C 765	MMCA	POWER OFF	700	

05000-MECHANICAL SUBSYSTEM (COMMANDS)

SEE INTERFACE SWITCHING MODULE (ISM)

04000-POWER SUBSYSTEM (COMMANDS)

C 246	POWER	BATTERY #1 OFF	353	SC-0C
C 264	POWER	BATTERY #5 OFF	353	SC-0C
C 265	POWER	BATTERY #6 OFF	353	SC-0C
C 267	POWER	BATTERY #2 OFF	353	SC-0C
C 306	POWER	BATTERY #7 OFF	353	SC-0C
C 310	POWER	BATTERY #3 OFF	353	SC-0C
C 327	POWER	BATTERY #8 OFF	353	SC-0C
C 331	POWER	BATTERY #4 OFF	353	SC-0C
C 346	POWER	TRICKLE CHARGE NORMAL	367	SC-0C
C 353	POWER	ALL BATTERIES ON (PRI)		SC-0C
C 354	POWER	SHUNT LOAD A OFF	437	SC-0C
C 355	POWER	ALL COMP LOADS OFF (PRI)		SC-0C
C 356	POWER	AUX LOAD #1 ON	374,413	
C 357	POWER	AUX LOAD #2 ON	374,413	
C 367	POWER	TRICKLE CHARGE OVERRIDE	346	SC-0C
C 373	POWER	VERIFY TICK	457	
C 374	POWER	ALL AUX LOADS OFF (PRI)		
C 375	POWER	SHUNT LOAD B OFF	437	SC-0C
C 376	POWER	COMP LOAD #1 ON	355	
C 377	POWER	COMP LOAD #2 ON	355	
C 413	POWER	ALL AUX LOADS OFF (B/U)		
C 414	POWER	COMP LOAD 3 ON	355	
C 415	POWER	SHUNT LOAD C OFF	437	SC-0C
C 416	POWER	COMP LOAD 4 ON	355	
C 417	POWER	COMP LOAD 5 ON	355	
C 434	POWER	COMP LOAD 6 ON	355	
C 435	POWER	AUX LOAD 3 ON	374,413	
C 436	POWER	AUX LOAD 4 ON	374,413	SC
C 437	POWER	ALL SHUNT LOADS ON		
C 455	POWER	AUX LOAD 5 ON	374,413	SC
C 456	POWER	SHUNT LOAD D OFF	437	SC-0C
C 457	POWER	VERIFY TOCK	373	
C 512	POWER	ALL BATT ON (B/U)		SC-0C
C 611	POWER	ALL COMP LDS OFF (B/U)		SC-0C

SEE INTERFACE SWITCHING MODULE (ISM)
SEE POWER SWITCHING MODULE (PSM)

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07000=THERMAL SUBSYSTEM (COMMANDS)

SEE INTERFACE SWITCHING MODULE (ISM)

08000=COMMAND CLOCK SUBSYSTEM (COMMANDS)

C 000	CLOCK	SPARE		
C 001	CLOCK	PRIMARY COMSTOR ON&FILL	003,005,006	
C 002	CLOCK	SPARE		
C 003	CLOCK	PRIMARY COMSTORE VERIFY	001,005,006	SC
C 004	CLOCK	PRIMARY COMSTOR COPY		
C 005	CLOCK	PRIMARY COMSTOR OFF	001	SC-OC
C 006	CLOCK	PRIMARY COMSTOR ACTIVATE	001,003,005	SC
C 007	CLOCK	SERIAL DATA TRANSFER ON		SC
C 010	CLOCK	COMMAND EXECUTION COUNTER RESET		
C 011	CLOCK	SELECT PRIMARY MATRIX DECODER	031	SC
C 012	CLOCK	SELECT PRIMARY MATRIX A DRIVERS	032	SC
C 013	CLOCK	SELECT PRIMARY MATRIX B DRIVERS	033	SC
C 014	CLOCK	SELECT PRIMARY OSCILLATOR	034	SC-OC
C 015	CLOCK	SELECT PRIMARY FREQ GENERATOR	035	SC-OC
C 016	CLOCK	SPARE		
C 017	CLOCK	LOAD TIME CODE		SC-OC
C 020	CLOCK	TURN NON-KEYED PS/COMSEC OFF	C_{A11},C_{B11}	SC-OC
C 021	CLOCK	REDUNDANT COMSTOR ON&FILL	023,025,026	
C 022	CLOCK	SPARE		
C 023	CLOCK	REDUNDANT COMSTOR VERIFY	021,025,026	SC
C 024	CLOCK	REDUNDANT COMSTOR COPY		
C 025	CLOCK	REDUNDANT COMSTOR OFF	021	SC-OC
C 026	CLOCK	REDUNDANT COMSTOR ACTIVATE	021,023,025	SC
C 027	CLOCK	SPARE		
C 030	CLOCK	SPARE		
C 031	CLOCK	SELECT REDUNDANT MATRIX DECODER	011	SC
C 032	CLOCK	SELECT REDUNDANT MATRIX A DRIVERS	012	SC
C 033	CLOCK	SELECT REDUNDANT MATRIX B DRIVERS	013	SC
C 034	CLOCK	SELECT REDUNTANT OSCILLATOR	014	SC-OC
C 035	CLOCK	SELECT REDUNTANT FREQ GENERATOR	015	SC-OC
C 036	CLOCK	SPARE		
C 037	CLOCK	SPARE		

SEE INTERFACE SWITCHING MODULE (ISM)

=ECAM (COMMANDS)

C 051	ECAM	ECAM LOAD	065	SC
C 065	ECAM	ECAM EXECUTE	051	SC
C 105	ECAM	ECAM RUN A	164	SC
C 164	ECAM	ECAM RUN B	105	SC
C 201	ECAM	ECAM ON	220	SC
C 220	ECAM	ECAM OFF	201	SC
C 245	ECAM	INH STOR CMDS/ZERO TIME		SC-OC
C 324	ECAM	ECAM OUTPUT ENABLE		SC

=CIU (COMMANDS)

C 780	CIU	SWITCH S/C REGULATOR (C_{A00})	SC-OC
C 781	CIU	CHANNEL B OFF (C_{A01})	SC-OC
C 782	CIU	CHANNEL B ON/SWITCH STAND/MSFN CMD LINKS (C_{A10})	SC-OC
C 783	CIU	COMMAND CLOCK PS/COMDECS ON ECAM OUTPUT DISABLE (C_{A11})	SC-OC

C 7A4	C&U	SWITCH S/C REGULATOR (CB00)		SC-0C
C 7A5	C&U	CHANNEL A OFF (CB01)		SC-0C
C 7A6	C&U	CHANNEL A ON/SWITCH STADAN/MOFN CMD LINKS (CB10)		SC-0C
C 7A7	C&U	COMMAND CLOCK PS/COMDECS ON ECAM OUTPUT DISABLE (CB11)		SC-0C

00000-TELEMETRY PROCESSOR SUBSYSTEM (COMMANDS)

C 260	TMP	A/D A ON	301	
C 261	TMP	OUTPUT CIRCUIT A ON	302	
C 262	TMP	SELECT FORMAT 1	303	SC-0C
C 300	TMP	CONTROL LOGIC A ON	321	
C 301	TMP	A/D B ON	260	SC-0C
C 302	TMP	OUTPUT CIRCUIT B ON	261	SC-0C
C 303	TMP	SELECT FORMAT 0	262	SC-0C
C 321	TMP	CONTROL LOGIC B ON	300	SC-0C
C 340	TMP	POWER A ON/B OFF	361,403	SC-0C
C 341	TMP	BI LEVEL MUX A ON	362	
C 342	TMP	ANALOG MUX A ON	363	
C 361	TMP	POWER A OFF	340	SC-0C
C 362	TMP	BI LEVEL MUX B ON	341	SC-0C
C 363	TMP	ANALOG MUX BI ON	342	SC-0C
C 401	TMP	ANALOG MUX A2 ON	420	
C 402	TMP	SERIAL MUX A ON	421	
C 403	TMP	POWER B ON/A OFF	340,422	SC-0C
C 420	TMP	ANALOG MUX B2 ON	401	SC-0C
C 421	TMP	SERIAL MUX B ON	402	SC-0C
C 422	TMP	POWER B OFF	403	SC-0C

*VHF TRANSMITTER (COMMANDS)

C 166	VHF XMTR	PLAYBACK NBTR 2	207,251	SC-0C
C 167	VHF XMTR	POWER #1 OFF	206	SC-0C
C 170	VHF XMTR	POWER #2 ON	211	
C 171	VHF XMTR	PLAYBACK OVERRIDE OFF	230	
C 206	VHF XMTR	POWER #1 ON	167	
C 207	VHF XMTR	REAL TIME MODE	166,251	
C 210	VHF XMTR	LOW POWER MODE	227	
C 211	VHF XMTR	POWER #2 OFF	170	SC-0C
C 227	VHF XMTR	HIGH POWER MODE	210	
C 230	VHF XMTR	PLAYBACK OVERRIDE ON	171	
C 231	VHF XMTR	SELECT XMTR A	250	
C 250	VHF XMTR	SELECT XMTR B	231	SC-0C
C 251	VHF XMTR	PLAYBACK NBTR 1	166,207	SC-0C

10000-NARROWBAND TAPE RECORDER SUBSYSTEM (COMMANDS)

C 543	NBTR 1	RECORD MODE	502,621	
C 562	NBTR 1	POWER OFF	543,621	
C 621	NBTR 1	PLAYBACK MODE	543,562	
C 542	NBTR 2	PLAYBACK MODE	601,620	
C 601	NBTR 2	RECORD MODE	542,620	
C 620	NBTR 2	POWER OFF	542,601	

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11000-UNIFIED S-BAND EQUIPMENT SUBSYSTEM (COMMANDS)

C 107	USB XPDR	BYPASS AUX OSC	150	
C 110	USB XPDR	SELECT XMTR B	126	SC
C 126	USB XPDR	SELECT XMTR A	110	SC
C 127	USB XPDR	RANGING ON	146	
C 130	USB XPDR	MODULATION INPUT CROSSED	147	SC-OC
C 146	USB XPDR	RANGING OFF	127	
C 147	USB XPDR	MODULATION INPUT NORMAL	130	
C 150	USB XPDR	ENABLE AUX OSC	107	
C 604	PMP	SELECT NBTR 2	646	
C 605	PMP	MODULATOR A ON	626	
C 606	PMP	SELECT NBTR	664	
C 624	PMP	SELECT WBVTR 1	645	
C 626	PMP	MODULATOR A OFF	605	
C 644	PMP	MODULATOR B ON	665	
C 645	PMP	SELECT WBVTR 2	624	
C 646	PMP	SELECT NBTR 1	604	
C 664	PMP	SELECT WBVTR	606	SC-OC
C 665	PMP	MODULATOR B OFF	644	

12000-WIDEBAND TELEMETRY SUBSYSTEM (COMMANDS)

C 540	WBPA 1	POWER ON	561	SC
C 541	WBPA 1	SELECT 10 WATT OUTPUT	600	SC-OC
C 561	WBPA 1	POWER OFF	540	
C 600	WBPA 1	SELECT 20 WATT OUTPUT	541	
C 046	WBPA 2	POWER ON	067	SC
C 047	WBPA 2	SELECT 10 WATT OUTPUT	106	SC-OC
C 067	WBPA 2	POWER OFF	046	
C 106	WBPA 2	SELECT 20 WATT OUTPUT	047	
C 466	WBFM	SELECT VCO B1	565	
C 474	WBFM	AUX DATA TO RBV FILTER A	703	
C 475	WBFM	DATA TO MSS FILTER B	760	
C 476	WBFM	RT DATA TO RBV FILTER B	722	
C 477	WBFM	ENABLE RBV FILTER B	666	
C 514	WBFM	DATA TO MSS FILTER A	741	
C 515	WBFM	RT DATA TO RBV FILTER A	703	
C 516	WBFM	DATA TO MSS FILTER B	760	
C 517	WBFM	WBVTR 1 DATA TO RBV FILTER B	722	
C 524	WBFM	SELECT VCO A1	547	
C 525	WBFM	INVERTER A POWER ON	566	
C 526	WBFM	ENABLE MODULATOR A AFC	545	
C 527	WBFM	INVERTER B POWER OFF	550	
C 530	WBFM	DISABLE MODULATOR B AFC	567	SC-OC
C 531	WBFM	WBVTR 2 DATA TO RBV FILTER B	722	
C 535	WBFM	DATA TO MSS FILTER A	741	
C 536	WBFM	WBVTR 1 DATA TO RBV FILTER A	703	
C 537	WBFM	WBVTR 1 DATA TO MSS FILTER B	760	
C 544	WBFM	ENABLE RBV FILTER A	625	
C 545	WBFM	DISABLE MODULATOR A AFC	526	SC-OC
C 546	WBFM	SELECT RBV BIAS A	564	
C 547	WBFM	SELECT VCO A2	524	SC-OC
C 550	WBFM	INVERTER B POWER ON	527	
C 555	WBFM	ENABLE MSS FILTER A	666	
C 556	WBFM	WBVTR 1 DATA TO MSS FILTER A	741	
C 557	WBFM	WBVTR 2 DATA TO RBV FILTER A	703	
C 564	WBFM	SELECT RBV BIAS B	546	

C 565	WBFM	SELECT VCO B2	466		SC=0C
C 566	WBFM	INVERTER A POWER OFF	625		
C 567	WBFM	ENABLE MODULATOR B AEC	630		
C 570	WBFM	WBVTR 2 DATA TO MSS FILTER B	760		
C 575	WBFM	AUX DATA TO RBV FILTER B	722		
C 576	WBFM	ENABLE MSS FILTER B	625		
C 577	WBFM	WBVTR 2 DATA TO MSS FILTER A	741		
		SEE INTERFACE SWITCHING MODULE (ISM)			

13000=WIDEBAND VIDEO TAPE RECORDER SUBSYSTEM (COMMANDS)

C 426	WBVTR 1	RECORD	447,464,465,504,505		
C 444	WBVTR 1	VOLTAGE PROTECT RELAY RESET			SC=0C
C 445	WBVTR 1	RECORD CURRENT ADJUST			SC=0C
C 446	WBVTR 1	BOT/EOT LOGIC ENABLE	672		SC=0C
C 447	WBVTR 1	PLAYBACK	426,464,465,504,505		
C 464	WBVTR 1	RBV STANDBY	426,447,464,504,505		
C 465	WBVTR 1	FAST REWIND	426,447,464,504,505		
C 467	WBVTR 1	VOLTAGE PROTECT ENABLE	506		
C 504	WBVTR 1	FAST FORWARD	426,447,464,465,505		
C 505	WBVTR 1	MSS STANDBY	426,447,464,465,504		
C 506	WBVTR 1	VOLTAGE PROTECT DISABLE	467		SC=0C
C 507	WBVTR 1	LAP			SR=0C
C 513	WBVTR 2	RECORD	534,551,552,571,572		
C 532	WBVTR 2	RECORD CURRENT ADJUST			SC=0C
C 533	WBVTR 2	BOT/EOT LOGIC ENABLE	751		SC=0C
C 534	WBVTR 2	PLAYBACK	513,551,552,571,572		
C 551	WBVTR 2	RBV STANDBY	513,534,552,571,572		
C 552	WBVTR 2	FAST REWIND	513,534,551,571,572		
C 553	WBVTR 2	VOLTAGE PROTECT RELAY RESET			SC=0C
C 554	WBVTR 2	VOLTAGE PROTECT ENABLE	573		
C 571	WBVTR 2	FAST FORWARD	513,534,551,552,572		
C 572	WBVTR 2	MSS STANDBY	513,534,551,552,571		
C 573	WBVTR 2	VOLTAGE PROTECT DISABLE	554		SC=0C
C 574	WBVTR 2	LAP			SR=0C
		SEE INTERFACE SWITCHING MODULE (ISM)			
		SEE POWER SWITCHING MODULE (PSM)			
		SEE AUXILIARY PROCESSING UNIT (ARU)			

14000=RETURN BEAM VIDICON SUBSYSTEM (COMMANDS)

C 352	RBV	CATHODE REACTIVATION ON	371		SR=0C
C 371	RBV	CATHODE REACTIVATION OFF	352		
C 372	RBV	REPHASE FROM VTR 1	473		
C 411	RBV	CCC POWER ON	432		SC=0C
C 412	RBV	APERTURE CORRECTOR IN	431		
C 427	RBV	SINGLE CYCLE	470		SC=0C
C 430	RBV	START PREPARE			SC=0C
C 431	RBV	APERTURE CORRECTOR OUT	412		
C 432	RBV	CCC POWER OFF	411		SC=0C
C 433	RBV	CAMERA 1 ON	511		SC=0C
C 450	RBV	EXPOSURE 1	451,452,453,454		SC=0C
C 451	RBV	EXPOSURE 2	450,452,453,454		SC=0C
C 452	RBV	EXPOSURE 5	450,451,453,454		SC=0C
C 453	RBV	EXPOSURE 3	450,451,452,454		SC=0C
C 454	RBV	EXPOSURE 4	450,451,452,453		SC=0C
C 470	RBV	CONTINUOUS CYCLE	427		SC=0C
C 471	RBV	CAMERA 2 ON	510		SC=0C
C 472	RBV	START CALIB			SC=0C
C 473	RBV	REPHASE FROM VTR 2	372		

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C 566	WBFM	INVERTER A POWER OFF	625	
C 567	WBFM	ENABLE MODULATOR B AFC	630	
C 570	WBFM	WBVTR 2 DATA TO MSS FILTER B	760	
C 575	WBFM	AUX DATA TO RBV FILTER B	722	
C 576	WBFM	ENABLE MSS FILTER B	625	
C 577	WBFM	WBVTR 2 DATA TO MSS FILTER A	741	
		SEE INTERFACE SWITCHING MODULE (ISM)		

13000-WIDEBAND VIDEO TAPE RECORDER SUBSYSTEM (COMMANDS)

C 426	WBVTR 1	RECORD	447,464,465,504,505	
C 444	WBVTR 1	VOLTAGE PROTECT RELAY RESET		SC-0C
C 445	WBVTR 1	RECORD CURRENT ADJUST		SC-0C
C 446	WBVTR 1	BOT/EOT LOGIC ENABLE	672	SC-0C
C 447	WBVTR 1	PLAYBACK	426,464,465,504,505	
C 464	WBVTR 1	RBV STANDBY	426,447,464,504,505	
C 465	WBVTR 1	FAST REWIND	426,447,464,504,505	
C 467	WBVTR 1	VOLTAGE PROTECT ENABLE	506	
C 504	WBVTR 1	FAST FORWARD	426,447,464,465,505	
C 505	WBVTR 1	MSS STANDBY	426,447,464,465,504	
C 506	WBVTR 1	VOLTAGE PROTECT DISABLE	467	SC-0C
C 507	WBVTR 1	LAP		SR-0C
C 513	WBVTR 2	RECORD	534,551,552,571,572	
C 532	WBVTR 2	RECORD CURRENT ADJUST		SC-0C
C 533	WBVTR 2	BOT/EOT LOGIC ENABLE	751	SC-0C
C 534	WBVTR 2	PLAYBACK	513,551,552,571,572	
C 551	WBVTR 2	RBV STANDBY	513,534,552,571,572	
C 552	WBVTR 2	FAST REWIND	513,534,551,571,572	
C 553	WBVTR 2	VOLTAGE PROTECT RELAY RESET		SC-0C
C 554	WBVTR 2	VOLTAGE PROTECT ENABLE	573	
C 571	WBVTR 2	FAST FORWARD	513,534,551,552,572	
C 572	WBVTR 2	MSS STANDBY	513,534,551,552,571	
C 573	WBVTR 2	VOLTAGE PROTECT DISABLE	554	SC-0C
C 574	WBVTR 2	LAP		SR-0C
		SEE INTERFACE SWITCHING MODULE (ISM)		
		SEE POWER SWITCHING MODULE (PSM)		
		SEE AUXILIARY PROCESSING UNIT (ARU)		

14000-RETURN BEAM VIDICON SUBSYSTEM (COMMANDS)

C 352	RBV	CATHODE REACTIVATION ON	371	SR-0C
C 371	RBV	CATHODE REACTIVATION OFF	352	
C 372	RBV	REPHASE FROM VTR 1	473	
C 411	RBV	CCC POWER ON	432	SC-0C
C 412	RBV	APERTURE CORRECTOR IN	431	
C 427	RBV	SINGLE CYCLE	470	SC-0C
C 430	RBV	START PREPARE		SC-0C
C 431	RBV	APERTURE CORRECTOR OUT	412	
C 432	RBV	CCC POWER OFF	411	SC-0C
C 433	RBV	CAMERA 1 ON	511	SC-0C
C 450	RBV	EXPOSURE 1	451,452,453,454	SC-0C
C 451	RBV	EXPOSURE 2	450,452,453,454	SC-0C
C 452	RBV	EXPOSURE 5	450,451,453,454	SC-0C
C 453	RBV	EXPOSURE 3	450,451,452,454	SC-0C
C 454	RBV	EXPOSURE 4	450,451,452,453	SC-0C
C 470	RBV	CONTINUOUS CYCLE	427	SC-0C
C 471	RBV	CAMERA 2 ON	510	SC-0C
C 472	RBV	START CALIB		SC-0C
C 473	RBV	REPHASE FROM VTR 2	372	

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C 510	RBV	CAMERA 2 OFF	471	SC-0C
C 511	RBV	CAMERA 1 OFF	433	SC-0C
		SEE INTERFACE SWITCHING MODULE (ISM)		
		SEE POWER SWITCHING MODULE (PSM)		

15000-MULTISPECTRAL SCANNER SUBSYSTEM (COMMANDS)

C 053	MSS	SYSTEM A ON	073	SC
C 054	MSS	SELECT BAND 1 HIGH VOLTAGE A	075	
C 055	MSS	SELECT BAND 2 HIGH VOLTAGE A	074	
C 056	MSS	SELECT BAND 3 HIGH VOLTAGE A	077	
C 057	MSS	BAND 1 ON	076	
C 072	MSS	SYSTEM B ON	073	SC-0C
C 073	MSS	SYSTEM OFF	053,072	
C 074	MSS	SELECT BAND 2 HIGH VOLTAGE B	055	SC-0C
C 075	MSS	SELECT BAND 1 HIGH VOLTAGE B	054	SC-0C
C 076	MSS	BAND 1 OFF	057	SC-0C
C 077	MSS	SELECT BAND 3 HIGH VOLTAGE B	056	SC-0C
C 112	MSS	HIGH VOLTAGE ON		SC
C 113	MSS	BAND 2 ON	132	
C 114	MSS	BAND 3 ON	135	
C 115	MSS	BAND 4 ON	134	
C 116	MSS	BAND 5 ON	137	
C 117	MSS	SELECT CALIBRATION LAMP A	136	
C 132	MSS	BAND 2 OFF	113	SC-0C
C 133	MSS	DOOR MOTOR POWER OFF	237	
C 134	MSS	BAND 4 OFF	115	SC-0C
C 135	MSS	BAND 3 OFF	114	SC-0C
C 136	MSS	SELECT CALIBRATION LAMP B	117	SC-0C
C 137	MSS	BAND 5 OFF	116	SC-0C
C 152	MSS	ROTATING SHUTTER DRIVER ON	173	
C 153	MSS	SCAN MONITOR ON	172	
C 154	MSS	BAND 1 HIGH GAIN	175	
C 155	MSS	BAND 2 HIGH GAIN	174	
C 156	MSS	CALIBRATION LAMP ON	177	
C 157	MSS	BAND 1 HIGH VOLTAGE ON	176	
C 172	MSS	SCAN MONITOR OFF	153	SC-0C
C 173	MSS	ROTATING SHUTTER DRIVER OFF	152	
C 174	MSS	BAND 2 LOW GAIN	155	
C 175	MSS	BAND 1 LOW GAIN	154	
C 176	MSS	BAND 1 HIGH VOLTAGE OFF	157	SC-0C
C 177	MSS	CALIBRATION LAMP OFF	156	SC-0C
C 212	MSS	BAND 2 HIGH VOLTAGE ON	233	
C 213	MSS	BAND 3 HIGH VOLTAGE ON	232	
C 214	MSS	SELECT SHUTTER MONITOR SOURCE A	235	
C 215	MSS	DOOR DIRECTION OPEN	234	SC
C 216	MSS	DOOR OVERRIDE ACTIVATE	273	SC-0C
C 232	MSS	BAND 3 HIGH VOLTAGE OFF	213	SC-0C
C 233	MSS	BAND 2 HIGH VOLTAGE OFF	212	SC-0C
C 234	MSS	DOOR DIRECTION CLOSE	215	SC
C 235	MSS	SELECT SHUTTER MONITOR SOURCE B	214	SC-0C
C 237	MSS	DOOR MOTOR POWER ON	133	SC
C 252	MSS	DOOR MOVE		SC-0C
C 253	MSS	BAND 5A GAIN STEP		SC-0C
C 254	MSS	DOOR HOLD ON	275	SC
C 255	MSS	SELECT SCAN MONITOR SOURCE A	274	
C 256	MSS	SCAN MIRROR INHIBIT	277	SC-0C

C 257	MSS	MUX NORMAL	276	
C 272	MSS	BAND 5B GAIN STEP		SC-0C
C 273	MSS	DOOR OVERRIDE RESET	316	SC
C 274	MSS	SELECT SCAN MONITOR SOURCE B	255	SC-0C
C 275	MSS	DOOR HOLD OFF	254	SC
C 276	MSS	MUX INHIBIT	257	SC-0C
C 277	MSS	SCAN MIRROR NORMAL	256	
C 312	MSS	SCAN MIRROR POWER LINE 1	256	
C 313	MSS	DOOR OVERRIDE SAFETY -SAFE	334	SC
C 314	MSS	MID SCAN CODE ON	335	
C 315	MSS	MUX COMPRESSION MODE	333	
C 317	MSS	RADIATION COOLER POWER ON	332	SC
C 332	MSS	RADIATION COOLER POWER OFF	317	SC
C 333	MSS	MUX LINEAR MODE	315	
C 334	MSS	DOOR OVERRIDE SAFETY ARM	313	SC-0C
C 335	MSS	MID SCAN CODE OFF	314	
C 336	MSS	SCAN MIRROR POWER LINE 2	312	SC-0C

SEE INTERFACE SWITCHING MODULE (ISM)
SEE POWER SWITCHING MODULE (PSM)

16000-DATA COLLECTION PLATFORMS SUBSYSTEM (COMMANDS)

C 366	DCS	RCVR 1 ON	407	
C 407	DCS	RCVR 1 OFF	366	SC-0C
C 350	DCS	RCVR 2 ON	406	SC-0C
C 406	DCS	RCVR 2 OFF	350	

17000-AUXILIARY PROCESSING UNIT (COMMANDS)

SEE INTERFACE SWITCHING MODULE (ISM)
SEE POWER SWITCHING MODULE (PSM)

-INTERFACE SWITCHING MODULE (COMMANDS)

C 613	ISM	DISABLE SELECTED SCANNER	636,734	SC-0C
C 614	ISM	SWITCHED TELEMETRY POWER ON	673	
C 615	ISM	ORBIT ADJUST THRUSTER HEATER ON	657	SC-0C
C 616	ISM	MSFN TO CIU A/STADAN TO CIU B	CA10,CB10,715	SC-0C
C 617	ISM	DISABLE PSM RELAY BUS	655	SC-0C
C 633	ISM	RIGHT SAD UNFUSED	674	SC-0C
C 634	ISM	CMD CLK RELAYS ON 5A FUSE	653	SC-0C
C 635	ISM	SEPERATION SWITCH BYPASS		
C 636	ISM	ENABLE SCAN & SELECT A	613,734	SC-0C
C 637	ISM	SPARE 4 RESET	735	
C 653	ISM	CMD CLK RELAYS ON 1A FUSE	634	
C 654	ISM	LEFT SAD UNFUSED	713	SC-0C
C 655	ISM	ENABLE PSM RELAY BUS	617	
C 656	ISM	APU POWER ON	737	
C 657	ISM	ORBIT ADJUST THRUSTER HEATER OFF	615	SC-0C
C 673	ISM	SWITCHED TELEMETRY POWER OFF	614	SC-0C
C 674	ISM	RIGHT SAD FUSED	633	
C 675	ISM	LOCK SSM	714	SC-0C
C 676	ISM	ENABLE USB XMTRS (RED)	757	
C 713	ISM	LEFT SAD FUSED	654	
C 714	ISM	UNLOCK SSM	615	SC-0C
C 715	ISM	MSFN TO CIU B/STADAN TO CIU A	CA10,CB10,616	SC-0C
C 716	ISM	ATTITUDE SENSOR POWER ON	774	

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C 717	ISM	WBTR BOT/EOT LOGIC DISABLE ARM		SC-0C
C 733	ISM	SWITCH PAYLOAD REGULATOR		SC-0C
C 734	ISM	ENABLE SCAN & SELECT A	613,636	SC-0C
C 735	ISM	SPARE 4 SET	637	
C 737	ISM	APU POWER OFF	656	SC-0C
C 754	ISM	ENABLE WBPA (RED)		SC-0C
C 755	ISM	ENABLE USB XMTR/WBPA TIMER SIGNAL	772	
C 756	ISM	COMP LOAD 7 ON	355	
C 757	ISM	DISABLE USB XMTRS	676,775	
C 772	ISM	DISABLE USB XMTR WBPA TIMER SIGNAL	755	SC-0C
C 773	ISM	COMP LOAD 8 ON	355	
C 774	ISM	ATTITUDE SENSOR POWER OFF	716	SC-0C
C 775	ISM	ENABLE USB XMTRS (PRI)	757	
C 776	ISM	ENABLE WBPA (PRI)		SC-0C

POWER SWITCHING MODULE (COMMANDS)

C 205	PSM	VTR 1 BYPASS ON	224	SC
C 224	PSM	VTR 1 POWER BYPASS OFF	205	SC
C 241	PSM	VTR 2 POWER BYPASS ON	320	SC
C 316	PSM	MSS HEATER ON	337	SC-0C
C 320	PSM	VTR 2 POWER BYPASS OFF	241	SC
C 337	PSM	MSS HEATER OFF	316	SC
C 345	PSM	SPARE 3 RESET	360	
C 347	PSM	ENABLE USBX OFF	364	SC-0C
C 351	PSM	RBV PRIMARY CONTROL ENABLE	424	
C 360	PSM	SPARE 3 SET	345	
C 364	PSM	DISABLE USBX OFF	347	
C 424	PSM	RBV PRIMARY CONTROL DISABLE	351	SC-0C
C 560	PSM	ORBIT ADJUST TIMER ENABLE	603	
C 563	PSM	WBVTR SEARCH TRACK SWITCHED	631	SC-0C
C 603	PSM	ORBIT ADJUST TIMER DISABLE	560	SC-0C
C 607	PSM	WBVTR 1 ON (PRIMARY)	651,766	
C 610	PSM	MSS ENABLE (PRI)	647	SC
C 612	PSM	RBV #1 TEM DISABLE	770	SC-0C
C 622	PSM	PRM FUSE TAP ON	767	SC-0C
C 625	PSM	INHIBIT WBFM RBV A/MSS B FILTERS	544,576	
C 627	PSM	ORBIT ADJUST ON #1)	745,764	SR-0C
C 630	PSM	WBVTR 1 CONTROL NORMAL	643	
C 631	PSM	WBVTR SEARCH TRACK NORMAL	563	
C 632	PSM	MSS ENABLE (BOTH)	647	SC
C 641	PSM	INVERTER A PWR TO WBFM	660	
C 643	PSM	WBVTR 1 CONTROL REVERSED	630	SC-0C
C 647	PSM	MSS DISABLE	610,632,662	SC-0C
C 650	PSM	WBVTR 2 ON (PRIMARY)	712,766	
C 651	PSM	WBVTR 1 OFF	607	
C 660	PSM	INVERTER B PWR TO WBFM	641	
C 662	PSM	MSS ENABLE (RED)	647	SC
C 666	PSM	INHIBIT WBFM RBV B/MSS A FILTERS	471,555	
C 667	PSM	RBV ON (PRIMARY)	731,766	SC
C 670	PSM	SOLENOID 1 ON	745,764	SR-0C
C 671	PSM	WBVTR 2 CONTROL NORMAL	726	
C 672	PSM	WBVTR#1 BOT/EOT LOGIC DISABLE	446	SC-0C
C 677	PSM	SPARE 1 SET	752	
C 701	PSM	ENABLE PAYLOAD TIMER SIGNAL	720	
C 703	PSM	INHIBIT DATA TO RBV FILTER A	474,515,536,557	
C 705	PSM	PRIME DATA TO WBPA 1 /WBPA 2	724,743	
C 707	PSM	RBV #2 TEM DISABLE	730	SC-0C
C 710	PSM	RBV ON (REDUNDANT)	731,766	SC-0C
C 711	PSM	SOLENOID 2 ON	745,764	SR-0C
C 712	PSM	WBVTR 2 OFF	650	
C 720	PSM	DISABLE PAYLOAD TIMER SIGNAL	701	SC-0C

C 722	PSM	INHIBIT DATA TO RBV FILTER B	476,517,531,575	
C 724	RSM	SUMMED DATA TO WBPA 1	705	SC-0C
C 726	RSM	WBVTR 2 CONTROL REVERSED	671	SC-0C
C 727	RSM	PRM ON	750,771	
C 730	RSM	RBV #2 TEM ENABLE	707	
C 731	RSM	RBV OFF	667,710,747	
C 732	RSM	SOLENOID 3 ON	745,764	SR-0C
C 736	RSM	SPARE 2 RESET	753	
C 741	RSM	INHIBIT DATA TO MSS FILTER A	514,535,556,577	
C 743	RSM	SUMMED DATA TO WBPA 2	705	SC-0C
C 745	PSM	SOLENOIDS OFF	627	
C 746	PSM	ORBIT ADJUST ON #2)	745,764	SR-0C
C 747	PSM	RBV ON (BOTH)	731,766	SC-0C
C 750	RSM	PRM OFF (1)	727	SC-0C
C 751	PSM	WBVTR#2 BOT/EOT LOGIC DISABLE	533	SC-0C
C 752	PSM	SPARE 1 RESET	677	
C 753	RSM	SPARE 2 SET	736	
C 760	RSM	INHIBIT DATA TO MSS FILTER B	475,516,537,570	
C 764	RSM	ORBIT ADJUST OFF	627,746	
C 766	RSM	PAYLOADS OFF	650,667,607,710	
C 767	RSM	PRM FUSE TAP OFF	622	SC-0C
C 770	RSM	RBV #1 TEM ENABLE	612	
C 771	RSM	PRM OFF (2)	727	SC-0C

*AUXILIARY PROCESSING UNIT (COMMANDS)

C 050	APU	STANDBY MODE	071	SC-0C
C 071	APU	NORMAL MODE	050	

*AUX LOAD CONTROLLER

C 070	ALC	MSS MAG COMP OFF	111	SC
C 111	ALC	MSS MAG COMP ON	070	SC

COMMANDS NOT USED

C 043 BLANK
C 052 BLANK
C 062 BLANK
C 066 BLANK
C 131 BLANK
C 143 BLANK
C 151 BLANK
C 217 BLANK
C 226 BLANK
C 236 BLANK
C 240 BLANK
C 242 BLANK
C 243 BLANK
C 263 BLANK
C 322 BLANK
C 323 BLANK
C 343 BLANK
C 400 BLANK
C 405 BLANK

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C 423           BLANK
C 440           BLANK
C 441           BLANK
C 442           BLANK
C 443           BLANK
C 460           BLANK
C 461           BLANK
C 462           BLANK
C 463           BLANK
C 500           BLANK
C 501           BLANK
C 502           BLANK
C 503           BLANK
C 520           BLANK
C 521           BLANK
C 522           BLANK
C 523           BLANK
C 652           BLANK
C 777           BLANK
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REVISION A                      17FEB78
REVISION B                      17FEB78
REVISION C                      27FEB78
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*END
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LANDSAT C TELEMETRY LIST

ELEC SYS SCHEMATIC

47J222909AY

REV C

INCLUDES AN-3 THRU AN-7

10/18/77

MJD/PCER 10/21/77

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1000 - ATTITUDE CONTROL SUBSYSTEM

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN		
	FOWARD SCANNER SIGNAL PROCESSOR										
1001	FWD SCAN LEAD EARTH PULSE	FSC L EP	ANOG	1/16	A001	15 09	4T02-2	7112-7	6T00-73		
1002	FWD SCAN TRAIL EARTH PULSE	FSC T EP	ANOG	1/16	A018	18 18	4T02-19	7112-6	6T00-72		
1003	FWD SCAN PRESSURE	FSC PRES	ANOG	1/16	A035	18 27	4T02-37	7112-4	6T00-70		
1004	FWD SCAN PREAMP. CARD TEMP	FSC PA T	ANOG	1/16	A052	02 37	4T02-55	7112-10	6T00-76		
1005	FWD SCAN REF PROCESSOR CARD TEMP	FSC RP T	ANOG	1/16	A069	15 69	4T02-72	7112-8	6T00-74		
1006	FWD SCAN UPSIDE DOWN	FSC UPDN	ANOG	1/16	A086	12 64	4T04-17	7112-11	6T00-77		D
1007	FWD SCAN MOTOR TEMP.	FSC TEMP	ANOG	1/16	A103	15 73	4T04-34	7112-5	6T00-71		
1008	SCANNER 1 ENA/DIS	SEE ISM									
	REAR SCANNER SIGNAL PROCESSOR										
1010	REAR SCAN LEAD EARTH PULSE	RSC L EP	ANOG	1/16	A137	12 09	4T06-31	7122-6	6T01-42		
1011	REAR SCAN TRAIL EARTH PULSE	RSC T EP	ANOG	1/16	A154	15 18	4T06-48	7122-7	6T01-43		
1012	REAR SCAN PRESSURE	RSC PRES	ANOG	1/16	A171	15 27	4T06-66	7122-4	6T01-40		
1013	REAR SCAN PREAMP CARD TEMP	RSC PA T	ANOG	1/16	A188	01 37	4T08-10	7122-10	6T01-46		
1014	REAR SCAN REF PROCESSOR CARD TEMP	RSC RP T	ANOG	1/16	A205	02 55	4T08-27	7122-8	6T01-44		
1015	REAR SCAN UPSIDE DOWN	RSC UPDN	ANOG	1/16	A222	10 64	4T10-6	7122-11	6T01-47		D
1016	REAR SCAN MOTOR TEMP	RSC TEMP	ANOG	1/16	A239	12 73	4T10-24	7122-5	6T01-41		
1017	SCANNER 2 ENA/DIS	SEE ISM									
	CONTROL LOGIC BOX (CLB)										
1020	ROLL LEAD AMP OUTPUT	R LD AMP	ANOG	1/1	A003	11 01	4T02-4	7001-24	6T00-21	FM 10	D
1021	ROLL DIFF TACH AMP OUTPUT	R DF TCH	ANOG	1/1	A020	13 01	4T02-22	7001-7	6T00-6	FM 10	D
1022	ROLL REAR MOTOR DRIVER (CCW)	RRMD CCW	ANOG	1/16	A037	10 09	4T02-39	7001-6	6T00-5		
1023	ROLL FWD MOTOR DRIVER (CCW)	RFMD CCW	ANOG	1/16	A054	12 18	4T02-57	7001-8	6T00-7		
1024	ROLL FWD MOTOR DRIVER (CW)	RFMD CW	ANOG	1/16	A071	02 28	4T04-2	7001-41	6T00-36		
1025	ROLL REAR MOTOR DRIVER (CW)	RRMD CW	ANOG	1/16	A105	18 54	4T04-36	7001-39	6T00-34		
1026	ROLL FWD FLYWHEEL SPEED	RFFW SPD	ANOG	1/1	A122	06 00	4T06-15	7001-22	6T00-19		
1027	ROLL REAR FLYWHEEL SPEED	RRFW SPD	ANOG	1/1	A139	07 00	4T06-33	7001-40	6T00-35		
1028	ROLL PNEUMATICS MODULATOR	R PN MOD	ANOG	1/16	A156	08 47	4T06-50	7001-25	6T00-22		D
1029	ROLL COARSE ERROR	R ER CRS	ANOG	1/1	A173	04 01	4T06-68	7001-42	6T00-37	FM 10	D
	SEE FUNC. NO. 1068										
1030	ROLL FINE ERROR	R ER FNE	ANOG	1/1	A190	05 01	4T08-12	7001-1	6T00-1		
1031	ROLL DIFF TACH AMP STATUS	R DFT ST	ANOG	1/16	A207	08 64	4T08-29	7001-35	6T00-75		
1032	ROLL SOLENOID DUTY CYCLE	R SOL DC	ANOG	1/16	A224	10 73	4T10-8	7001-50	6T00-45		
1033	YAW MOTOR DRIVER (CW)	Y MD CW	ANOG	1/16	A225	02 09	4T10-9	7001-28	6T00-25		
1034	YAW MOTOR DRIVER (CCW)	Y MD CCW	ANOG	1/16	A242	08 18	4T10-27	7001-11	6T00-10		
1035	YAW TACH AMP OUTPUT	Y TACH	ANOG	1/1	A259	06 01	4T10-44	7001-12	6T00-11		D
1036	YAW PNEUMATICS MODULATOR	Y PN MOD	ANOG	1/16	A276	01 28	4T10-62	7001-45	6T00-40		D
1037	YAW SOLENOID DUTY CYCLE	Y SOL DC	ANOG	1/16	A293	18 36	4T14-6	7001-16	6T00-15		
1038	PITCH MOTOR DRIVER (CCW)	P MD CCW	ANOG	1/16	A310	08 46	4T14-24	7001-43	6T00-38		
1039	PITCH MOTOR DRIVER (CW)	P MD CW	ANOG	1/16	A327	15 54	4T14-41	7001-47	6T00-42		
1040	PITCH COARSE ERROR	P ER CRS	ANOG	1/1	A004	07 01	4T02-5	7001-26	6T00-23	FM 10	D
	SEE FUNC NO. 1069										
1041	PITCH FINE ERROR	P ER FNE	ANOG	1/1	A021	04 02	4T02-23	7001-34	6T00-31		

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN		
1_0^{42}	PITCH TACH	P TACH	ANLOG	1/16	A_0^{38}	0_1 64	$^4T_02\text{-}4_0$	$^7_{00}1\text{-}17$	$^6T_{00}\text{-}16$		
1_0^{43}	PITCH FLYWHEEL SPEED	P FW SPD	ANLOG	1/1	A_0^{55}	0_5 0_2	$^4T_02\text{-}58$	$^7_{00}1\text{-}27$	$^6T_{00}\text{-}24$		D
1_0^{44}	PITCH PNEUMATIC MODULATOR	P PN MOD	ANLOG	1/1	A_0^{89}	13 0_0	$^4T_04\text{-}2_0$	$^7_{00}1\text{-}10$	$^6T_{00}\text{-}9$	FM 10	D
1_0^{45}	PITCH SOLENOID DUTY CYCLE	P SOL DC	ANLOG	1/16	A_1^{06}	0_2 73	$^4T_04\text{-}37$	$^7_{00}1\text{-}33$	$^6T_{00}\text{-}3_0$		
							$^4T_10\text{-}1_0$	$^7_{00}1\text{-}38$	$^6T_{00}\text{-}33$		
1_0^{46}	O.A./ACQ MODE STATUS	OA/AQ ST	ANLOG	1/16	A_1^{23}	0_2 0_8	$^4T_06\text{-}1_6$	$^7_{00}1\text{-}18$	$^6T_{00}\text{-}79$		
1_0^{47}	PITCH POSIT/($_0$.3(($_0$.1)DEG YAW BIAS STATUS	P/YPR ST	ANLOG	1/16	A_1^{40}	0_8 17	$^4T_06\text{-}34$	$^7_{00}1\text{-}3$	$^6T_{00}\text{-}2$		
1_0^{48}	($_0$.5((1.6()3.4) DEG PITCH POSIT BIAS STATUS	PBIAS	ANLOG	1/16	A_1^{57}	1_0 27	$^4T_06\text{-}5_1$	$^7_{00}1\text{-}2$	$^6T_{00}\text{-}78$		
1_0^{49}	PLUS OR MINUS PITCH POSIT BIAS/ YAW POSIT BIAS/ RMP A/B STATUS	PYRMP ST	ANLOG	1/16	A_1^{74}	12 35	$^4T_06\text{-}69$	$^7_{00}1\text{-}2_0$	$^6T_{00}\text{-}17$		
1_0^{50}	PITCH AND ROLL MOM. UNLOAD	PR UNLD	ANLOG	1/16	A_1^{91}	0_2 46	$^4T_08\text{-}13$	$^7_{00}1\text{-}37$	$^6T_{00}\text{-}32$		
1_0^{51}	LOW VOLTAGE-PNEU INTERLOCK	LV/P INT	ANLOG	1/16	A_2^{08}	12 54	$^4T_08\text{-}3_0$	$^7_{00}1\text{-}46$	$^6T_{00}\text{-}4_1$		
1_0^{52}	PNEU INTERLOCK BYPASS AND YAW FINE CONTROL	YFN C EN	ANLOG	1/16	A_2^{09}	18 63	$^4T_08\text{-}3_1$	$^7_{00}1\text{-}29$	$^6T_{00}\text{-}26$		
1_0^{53}	CLB PHASE A CLOCK	CLOCK A	ANLOG	1/16	A226	18 72					
1_0^{54}	CLB PHASE B CLOCK	CLOCK B	ANLOG	1/16	A243	0_1 0_8	$^4T_10\text{-}28$	$^7_{00}1\text{-}2_1$	$^6T_{00}\text{-}18$		
1_0^{55}	CLB +/- 10 VOLT SUPPLY	+/- 10V	ANLOG	1/16	A_2^{60}	0_2 17	$^4T_10\text{-}45$	$^7_{00}1\text{-}23$	$^6T_{00}\text{-}2_0$		D
1_0^{56}	CLB +/- 6 VOLT SUPPLY	+/- 6V	ANLOG	1/16	A277	0_8 27	$^4T_10\text{-}63$	$^7_{00}1\text{-}9$	$^6T_{00}\text{-}0_8$		D
1_0^{57}	CLB POWER SUPPLY VOLTAGE	P/S VOLT	ANLOG	1/16	A294	0_1 46	$^4T_14\text{-}7$	$^7_{00}1\text{-}3_0$	$^6T_{00}\text{-}27$		
1_0^{58}	CLB MOTOR DRIVER CARD TEMP	MTR DR T	ANLOG	1/16	A_3^{11}	15 63	$^4T_14\text{-}25$	$^7_{00}1\text{-}4$	$^6T_{00}\text{-}3$		
1_0^{59}	CLB POWER SUPPLY CARD TEMP	PS CRD T	ANLOG	1/16	A^{345}	0_1 73	$^4T_14\text{-}6_0$	$^7_{00}1\text{-}13$	$^6T_{00}\text{-}12$		
1_0^{60}	RLNA INTO YAW OUT/IN	RLNA-YAW	DIG B	1/16	2B10	10 01	$^4T_20\text{-}26$	$^7_{00}1\text{-}36$	$^6T_{00}\text{-}81$		
1_0^{61}	$^4_{00}$ RPM INTERLNK DIS/EN	400 RPM	DIG B	1/16	2B11	12 01	$^4T_20\text{-}36$	$^7_{00}1\text{-}44$	$^6T_{00}\text{-}39$		
1_0^{62}	ROLL (+) SOLENOID ON/OFF	R + SOL	DIG B	1/1	8B27	16 0_2	$^4T_11\text{-}38$	$^7_{00}1\text{-}15$	$^6T_{00}\text{-}14$	$^5Z_{10}\text{-}1$	
1_0^{63}	ROLL (-) SOLENOID ON/OFF	R - SOL	DIG B	1/1	5B28	17 0_2	$^4T_11\text{-}45$	$^7_{00}1\text{-}48$	$^6T_{00}\text{-}43$	$^5Z_{10}\text{-}2$	
1_0^{64}	PITCH (+) SOLENOID ON/OFF	P + SOL	DIG B	1/1	5B17	1_0 0_3	$^4T_24\text{-}43$	$^7_{00}1\text{-}49$	$^6T_{00}\text{-}44$		
1_0^{65}	PITCH (-) SOLENOID ON/OFF	P - SOL	DIG B	1/1	5B18	17 0_3	$^4T_24\text{-}53$	$^7_{00}1\text{-}32$	$^6T_{00}\text{-}29$		
1_0^{66}	YAW (+) SOLENOID ON/OFF	Y + SOL	DIG B	1/1	7B27	16 0_2	$^4T_11\text{-}37$	$^7_{00}1\text{-}31$	$^6T_{00}\text{-}28$	$^5Z_{10}\text{-}3$	
1_0^{67}	YAW (-) SOLENOID ON/OFF	Y - SOL	DIG B	1/1	3B19	16 0_4	$^4T_24\text{-}61$	$^7_{00}1\text{-}14$	$^6T_{00}\text{-}13$		
1_0^{68}	ROLL COARSE ERROR SEE FUNC. NO. 1_0^{29}	R ER CRS	ANLOG	1/16	A173	1_0 31	$^4T_06\text{-}68$	$^7_{00}1\text{-}42$	$^6T_{00}\text{-}37$		D
1_0^{69}	PITCH COARSE ERROR SEE FUNC. NO. 1_0^{40}	P ER CRS	ANLOG	1/16	A_0^{04}	18 49	$^4T_02\text{-}5$	$^7_{00}1\text{-}26$	$^6T_{00}\text{-}23$		D
1_2^{90}	SINGLE SCANNER MODE UNLOCK/LOCK	SEE ISM									
1_2^{91}	SCANNER DISABLE SELECT 2/1	SEE ISM									
	YAW RATE GYRO (YRG)										
1_0^{70}	YRG HOUSING TEMPERATURE	YRG HS T	ANLOG	1/16	A256	18 0_7	$^4T_10\text{-}41$	$^7_{3_0}2\text{-}3$	$^6T_{01}\text{-}13$		
1_0^{71}	YRG WHEEL SPEED	YRG SPD	ANLOG	1/16	A257	0_1 17	$^4T_10\text{-}42$	$^7_{3_0}2\text{-}5$	$^6T_{01}\text{-}14$		
1_0^{72}	YRG INDICATED RATE	YRG RATE	ANLOG	1/1	A274	13 0_3	$^4T_10\text{-}6_0$	$^7_{3_0}2\text{-}1$	$^6T_{01}\text{-}12$	FM 10	D

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	RATE MEASURING PACKAGE NO 1 (RMP1)								
10^{8}_{0}	RMP SUPPLY VOLTAGE NO 1	RP1 PS V	ANLOG	1/16	A_{00}^{6}	01 26	$4T_{0}^{2}$-7	75_{0}^{2}-3	$6T_{01}$-6_{0}
10^{81}	RMP MOTOR VOLTAGE NO 1	RP1 MT V	ANLOG	1/16	A_{00}^{23}	10 35	$4T_{0}^{2}$-25	75_{0}^{2}-4	$6T_{01}$-61
10^{82}	RMP MOTOR CURRENT NO 1	RP1 MT I	ANLOG	1/16	A_{00}^{57}	15 44	$4T_{0}^{2}$-6_{0}	75_{0}^{2}-5	$6T_{01}$-62
10^{83}	RMP A HEATER POWER	RMP HTRP	ANLOG	1/16	A_{00}^{74}	18 53	$4T_{0}^{4}$-5	75_{0}^{2}-7	$6T_{01}$-64
10^{84}	RMP GYRO TEMPERATURE NO 1	RP1 GY T	ANLOG	1/16	A_{00}^{91}	01 63	$4T_{0}^{4}$-22	75_{0}^{2}-9	$6T_{01}$-65
10^{85}	RMP PACKAGE TEMP NO 1	RP1 PK T	ANLOG	1/16	A_{10}^{08}	02 72	$4T_{0}^{4}$-39	75_{0}^{2}-10_{0}	$6T_{01}$-66
10^{86}	RMP INDICATED RATE (MEDIUM RESOLUTION) NO 1	RP1 IR M	ANLOG	1/1	A_{19}^{3}	06 03	$4T_{0}^{8}$-15	75_{0}^{2}-12	$6T_{01}$-68
10^{87}	RMP INDICATED RATE (HIGH RESOLUTION)	RP1 IR H	ANLOG	1/1	A142	09 01	$4T_{0}^{6}$-36	75_{0}^{2}-1;	$6T_{01}$-67
10^{88}	RMP RELAY GROUP A STATUS NO 1	RP1 ASTA	ANLOG	1/16	A_{15}^{9}	15 07	$4T_{0}^{6}$-53	75_{0}^{2}-1	$6T_{01}$-58
10^{89}	RMP RELAY GROUP B STATUS NO 1	RP1 BSTA	ANLOG	1/16	A_{17}^{6}	18 16	$4T_{0}^{6}$-7_{1}	75_{0}^{2}-2	$6T_{01}$-59
	RATE MEASURING PACKAGE NO 2 (RMP2)								
10^{9}_{0}	RMP SUPPLY VOLTAGE NO 2	RP2 PS V	ANLOG	1/16	A177	18 25	$4T_{0}^{6}$-72	76_{0}^{2}-3	$6T_{01}$-54
10^{91}	RMP MOTOR VOLTAGE NO 2	RP2 MT V	ANLOG	1/16	A_{19}^{4}	08 35	$4T_{0}^{8}$-16	76_{0}^{2}-4	$6T_{01}$-63
10^{92}	RMP MOTOR CURRENT NO 2	RP2 MT I	ANLOG	1/16	A211	12 44	$4T_{0}^{8}$-33	76_{0}^{2}-5	$6T_{01}$-69
10^{93}	RMP HEATER POWER NO 2	RP2 HTRP	ANLOG	1/16	A228	15 53	$4T_{10}$-12	76_{0}^{2}-7	$6T_{01}$-78
10^{94}	RMP GYRO TEMPERATURE NO 2	RP2 GY T	ANLOG	1/16	A245	18 62	$4T_{10}$-3_{0}	76_{0}^{2}-19	$6T_{01}$-79
10^{95}	RMP PACKAGE TEMPERATURE NO 2	RP2 PK T	ANLOG	1/16	A262	01 72	$4T_{10}$-47	76_{0}^{2}-10	$6T_{01}$-8_{0}
10^{96}	RMP INDICATED RATE (MEDIUM RESOLUTION) NO 2	RP2 IR M	ANLOG	1/1	A279	09 02	$4T_{10}$-65	76_{0}^{2}-12	$6T_{01}$-82
10^{97}	RMP INDICATED RATE (HIGH RESOLUTION) NO 2	RP2 IR H	ANLOG	1/1	A_{31}^{3}	07 02	$4T_{14}$-27	76_{0}^{2}-11	$6T_{01}$-81
10^{98}	RMP RELAY GROUP A STATUS NO 2	RP2 ASTA	ANLOG	1/16	A_{33}^{0}	12 07	$4T_{14}$-44	76_{0}^{2}-1	$6T_{01}$-5_{1}
10^{99}	RELAY GROUP B STATUS NO 2	RP2 BSTA	ANLOG	1/16	A347	15 16	$4T_{14}$-62	76_{0}^{2}-2	$6T_{01}$-52
	INITIATION TIMER								
12^{0}_{0}	INITIATION TIMER $T1^{5}$	15S TMR	ANLOG	1/16	A_{00}^{7}	15 25	$4T_{0}^{2}$-8	80_{0}^{3}-8	$6T_{00}$-84
12^{01}	INITIATION TIMER $T5_{0}$	5_{0}S TMR	ANLOG	1/16	A_{00}^{41}	02 35	$4T_{0}^{2}$-43	80_{0}^{3}-9	$6T_{00}$-85
12^{02}	INITIATION TIMER RESET ON/OFF	TIMR RST	DIG B	1/16	$4B_{01}$	01 00	$4T_{16}$-5	80_{0}^{3}-7	$6T_{00}$-83
	PNEUMATICS								
12^{10}	GAS TANK TEMPERATURE	TANK T	ANLOG	1/16	A291	10 44	4T14-4	77_{0}^{2}-3	$6T_{01}$-53
12^{11}	MANIFOLD TEMPERATURE	MANFLD T	ANLOG	1/16	A_{30}^{8}	12 53	4T14-22	77_{0}^{2}-5	$6T_{01}$-55
12^{12}	GAS TANK PRESSURE	TANK P	ANLOG	1/16	A325	15 62	4T14-39	77_{0}^{2}-9	$6T_{01}$-57
12^{13}	MANIFOLD PRESSURE (LOW)	MANFLD P	ANLOG	1/16	A342	18 71	4T14-57	77_{0}^{2}-7	$6T_{01}$-56

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	SOLAR ARRAY DRIVE - RIGHT (SADR)								
122_0	SAD RIGHT MTR. WINDING VOLT	SDR MWDV	ANLG	1/1	$A00^5$	$09\ 00$	$4T_02\text{-}6$	$74_13\text{-}11$	$6T_00\text{-}48$
122_1	SAD RIGHT TACH OUTPUT	SDR TACH	ANLG	1/1	$A022$	$05\ 03$	$4T_02\text{-}24$	$74_13\text{-}16$	$6T_00\text{-}52$
1222	SAD RIGHT MECH HOUSING TEMP	SDR MHGT	ANLG	$1/16$	$A039$	$10\ 07$	$4T_02\text{-}4_1$	$74_13\text{-}9$	$6T_00\text{-}46$
1223	SAD RIGHT MTR WINDING TEMP	SDR MWDT	ANLG	$1/16$	$A073$	$12\ 16$	$4T_04\text{-}4$	$74_13\text{-}10$	$6T_00\text{-}47$
1224	SAD RIGHT FWD SUN SENSOR TMP	SDR FSST	ANLG	$1/16$	$A09_0$	$12\ 25$	$4T_04\text{-}21$	$74_13\text{-}22$	$6T_00\text{-}58$
122^5	SAD RIGHT REAR SUN SENSIR TEMP	SDR RSST	ANLG	$1/16$	$A10^7$	$01\ 35$	$4T_04\text{-}38$	$74_13\text{-}21$	$6T_00\text{-}57$
1226	SAD RIGHT SUN SENSOR PREAMP OUTPUT	SDR SSPA	ANLG	$1/16$	$A124$	$08\ 44$	$4T_06\text{-}17$	$74_13\text{-}18$	$6T_00\text{-}54$
1227	SAD RIGHT $-_15$V CONVERTER	SDR $-_15$V	ANLG	$1/16$	$A14_1$	$10\ 53$	$4T_06\text{-}35$	$74_13\text{-}2_0$	$6T_00\text{-}56$
1228	SAD RIGHT HOUSING PRESSURE	SDR PRES	ANLG	$1/16$	$A158$	$12\ 62$	$4T_06\text{-}5_2$	$74_13\text{-}14$	$6T_00\text{-}5_0$
1229	SAD RIGHT RATE BIAS NORMAL/HIGH	SDR RATE	DIG B	$1/16$	2B12	$15\ 01$	$4T_20\text{-}47$	$74_13\text{-}17$	$6T_00\text{-}53$
123_0	SAD RIGHT PHASE SWITCH CW/CCW	SDR PHSW	DIG B	$1/16$	2B23	$18\ 01$	$4T_09\text{-}29$	$74_13\text{-}12$	$6T_00\text{-}49$ $5Z_{10}\text{-}4$
123_1	SAD RIGHT POWER UNFUSED/FUSED	SEE ISM							
1292	RIGHT COSINE POT OUT	SEE ISM							
	SOLAR ARRAY DRIVE - LEFT (SADL)								
124_0	SAD LEFT MTR WINDING VOLTAGE	SDL MWDV	ANLG	1/1	$A125$	$06\ 02$	$4T_06\text{-}18$	$74_23\text{-}11$	$6T_01\text{-}2_0$
124_1	SAD LWFT TACH OUTPUT	SDL TACH	ANLG	1/1	$A21_0$	$07\ 03$	$4T_08\text{-}32$	$74_23\text{-}16$	$6T_01\text{-}24$
1242	SAD LEFT MECH HOUSING TEMP	SDL MHGT	ANLG	$1/16$	$A227$	$15\ 71$	$4T_10\text{-}11$	$74_23\text{-}9$	$6T_01\text{-}18$
1243	SAD LEFT MTR WINDING TEMP	SDL MWDT	ANLG	$1/16$	$A244$	$08\ 07$	$4T_10\text{-}29$	$74_23\text{-}10$	$6T_01\text{-}19$
1244	SAD LEFT FWD SUN SENSOR TEMP	SDL FSST	ANLG	$1/16$	$A26_1$	$10\ 16$	$4T_10\text{-}46$	$74_23\text{-}22$	$6T_01\text{-}3_0$
1245	SAD LEFT REAR S/S TEMP	SDL RSST	ANLG	$1/16$	$A278$	$10\ 25$	$4T_10\text{-}64$	$74_23\text{-}21$	$6T_01\text{-}29$
1246	SAD LEFT SUN SENSOR PREAMP OUTPUT	SDL SSPA	ANLG	$1/16$	$A295$	$18\ 34$	$4T_14\text{-}8$	$74_23\text{-}18$	$6T_01\text{-}26$
1247	SAD LEFT $-_15$V CONVERTER	SDL $-_15$V	ANLG	$1/16$	$A329$	$02\ 44$	$4T_14\text{-}43$	$74_23\text{-}2_0$	$6T_01\text{-}28$
1248	SAD LEFT HOUSING PRESSURE	SDL PRES	ANLG	$1/16$	$A346$	$08\ 53$	$4T_14\text{-}6_1$	$74_23\text{-}14$	$6T_01\text{-}22$
1249	SAD LEFT RATE BIAS NORMAL/HI	SDL RATE	DIG B	$1/16$	2B13	$01\ 02$	$4T_20\text{-}57$	$74_23\text{-}17$	$6T_01\text{-}25$
125_0	SAD LEFT PHASE SWITCH CW/CCW	SDL PHSW	DIG B	$1/16$	2B24	$02\ 02$	$4T_11\text{-}2$	$74_23\text{-}12$	$6T_01\text{-}21$ $5Z_{10}\text{-}5$
125_1	SAD LEFT POWER UNFUSED/FUSED	SEE ISM							
1293	LEFT COSINE POT OUT	SEE ISM							

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	ACS STRUCTURAL TEMPERATURES								
1260	BASEPLATE 1 TEMP(-Y)	TH01BP-Y	ANLG	1/16	A002	10 62	4T02-3	8102-17	6T01-76
1261	BASEPLATE 2 TEMP (+)	TH02BP+X	ANLG	1/16	A019	12 71	4T02-20	8102-28	6T01-75
1262	BASEPLATE 3 TEMP (+)	TH03BP+Y	ANLG	1/16	A036	02 07	4T02-38	8102-29	6T01-74
1263	THERMAL SHIELD 4 TEMP (+X)	TH04TS+X	ANLG	1/16	A053	08 16	4T02-56	8102-31	6T01-73
1264	THERMAL SHIELD 5 TEMP (-X)	TH05TS-X	ANLG	1/16	A070	08 25	4T02-73	8102-12	6T01-72
1265	THERMAL SHIELD 6 TEMP (-Y)	TH06TS-Y	ANLG	1/16	A087	15 34	4T04-18	8102-11	6T01-71
1266	THERMAL SHIELD 7 TEMP (+X)	TH07TS+X	ANLG	1/16	A121	01 44	4T06-14	8102-10	6T01-70
1267	THERMAL SHIELD 8 TEMP (Z)	TH08TS Z	ANLG	1/16	A138	02 53	4T06-32	8102-30	6T01-77
1268	LOUVER HOUSING +X END 9 TEMP	TH01LH+X	ANLG	1/16	A155	08 62	4T06-49	8102-16	6T01-10
1269	LOUVER HOUSING MIDPOINT 10 TEMP	TH02LHM	ANLG	1/16	A172	10 71	4T06-67	8102-19	6T01-23
1270	PITCH WHEEL TEMP 11	THPWT	ANLG	1/16	A189	01 07	4T08-11	8102-15	6T01-27
1271	YAW WHEEL TEMP 12	THYWT	ANLG	1/16	A206	02 16	4T08-28	8102-14	6T01-35
1272	PNEL CYL AT MTG INTERFACE 13 TEMP	TH01LCY	ANLG	1/16	A223	02 25	4T10-7	8102-18	6T01-36
1273	LOWER STRUCTURE AT BASE OF CYLINDER 14 TEMP	TH01LSCB	ANLG	1/16	A240	12 34	4T10-25	8102-13	6T01-38
1274	PNEL CYL TOP 15 TEMP	TH01UCY	ANLG	1/16	A241	18 43	4T10-26	8102-32	6T01-39
1275	LEFT SAD RADIATOR 16 TEMP (+X)	TH01LRAD	ANLG	1/16	A258	15 32	4T10-43	8102-33	6T01-45
1276	RIGHT SAD RADIATOR 17 TEMP (-X)	TH01RRAD	ANLG	1/16	A275	02 62	4T10-61	8102-34	6T01-48
1277	TCM ZENER VOLTAGE	TCM ZN V	ANLG	1/16	A292	08 71	4T14-5	8102-20	6T01-84
1278	YAW NOZZLE ARM 20 TEMP	TH01YNZI	ANLG	1/16	A309	15 43	4T14-23	8102-37	6T01-83
1279	RIGHT +X RADIATOR 18 TEMP	TH01RR+X	ANLG	1/16	A326	15 58	4T14-40	8102-35	6T01-49
1280	LOUVER HOUSING -X END 19 TEMP	TH01LH-X	ANLG	1/16	A342	15 59	4T14-58	8102-36	6T01-50

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2000 - ORBIT ADJUST SUBSYSTEM

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	ORBIT ADJUST SUBSYSTEM (OAS)								
2001	PROPELLANT TANK TEMPERATURE	P TANK T	ANOG	1/16	A233	18 06	4T10-17	5003-*C	
2003	THRUST CHAMBER NO.1 TEMPERATURE	CHMB 1 T	ANOG	1/16	A250	08 43	4T10-35	5003-Y	
2004	THRUST CHAMBER NO.2 TEMPERATURE	CHMB 2 T	ANOG	1/16	A267	10 52	4T10-53	5003-Z	
2005	THRUST CHAMBER NO.3 TEMPERATURE	CHMB 3 T	ANOG	1/16	A284	12 61	4T10-70	5003-*A	
2006	LINE PRESSURE	LINE P	ANOG	1/16	A301	18 70	4T14-14	5003-R	
2007	SOLENOID VALVE NO.1 ON/OFF	SOLNO 1	DIG B	1/1	7B28	17 02	4T11-47	5003-A	5Z10-6
2008	SOLENOID VALVE NO.2 ON/OFF	SOLNO 2	DIG B	1/1	7B18	17 03	4T24-55	5003-C	
2009	SOLENOID VALVE NO.3 ON/OFF	SOLNO 3	DIG B	1/1	7B19	16 04	4T24-65	5003-E	
2020	OA THRUSTER HEATERS ON/OFF	SEE ISM							
2030	OA SOL POWER ENA/DIS	SEE PSM							
2035	OA TIMER ENA/DIS	SEE PSM							

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3000 - ATTITUDE MEASUREMENT SENSOR

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	ATTITUDE MEASUREMENT SENSOR (AMS)								
3000	+ROLL SIGNAL	ROLL +	ANOG	1/1	A372	09 03	4T03-13	5G03-A	
3001	-ROLL SIGNAL	ROLL -	ANOG	1/1	A389	05 04	4T03-30	5G03-R	
3002	+PITCH SIGNAL	PITCH +	ANOG	1/1	A406	06 04	4T01-9	5G03-E	
3003	-PITCH SIGNAL	PITCH -	ANOG	1/1	A423	04 04	4T01-27	5G03-F	
3004	TEMPERATURE NO.1 (CASE)	CASE T1	ANOG	1/16	A440	18 52	4T01-44	5G03-J	
3005	TEMERATURE NO.2 (I.R.ASSEMBLY)	ASSY T2	ANOG	1/16	A457	01 62	4T01-62	5G03-K	
3006	ATTITUDE SENSOR ON/OFF	SEE ISM							

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4000 - MAGNETIC MOMENT ASSEMBLY

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	MAGNETIC MOMENT COMPENSATION ASSEMBLY (MMCA)								
4001	BOARD A1 TEMP	A1 BRD T	ANLG	1/16	A099	15 64	4T04-30	5G08-20	
4002	BOARD A2 TEMP	A2 BRD T	ANLG	1/16	A013	18 73	4T02-14	5G08-19	
4003	HALL SENSOR CURRENT	HALL CUR	ANLG	1/16	A030	15 03	4T02-32	5G08-21	
4004	YAW FLUX DENSITY	Y FLUX D	ANLG	1/16	A047	18 12	4T02-49	5G08-17	
4005	PITCH FLUX DENSITY	P FLUX D	ANLG	1/16	A064	10 49	4T02-67	5G08-16	
4006	ROLL FLUX DENSITY	R FLUX D	ANLG	1/16	A065	08 40	4T02-68	5G08-18	
4007	POWER ON/OFF	POWER	DIG B	1/16	1B16	12 03	4T24-29	5G08-09	
4008	CAPACITOR DUMP/CHARGE	CAP	DIG B	1/16	2B02	02 00	4T16-14	5G08-10	
4010	POLARITY (+)/(-)	POL	DIG B	1/16	2B04	10 00	4T16-34	5G08-07	
4012	CAPACITOR HI/LO	CAPTANCE	DIG B	1/16	2B06	15 00	4T16-55	5G08-12	
4013	YAW COIL OUT/IN	Y COIL	DIG B	1/16	2B07	18 00	4T16-66	5G08-05	
4014	PITCH COIL OUT/IN	P COIL	DIG B	1/16	2B08	01 01	4T20-5	5G08-04	
4015	ROLL COIL OUT/IN	R COIL	DIG B	1/16	2B09	02 01	4T20-16	5G08-06	

5000 - UNFOLD SUBSYSTEM

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OF POOR QUALITY

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	UNFOLD TIMER								
$5_{00}1$	SQUIB ARM POWER	SQIB PWR	DIG B	1/1	OB27	16 02	4T11-30	5P30-A	5Z10-7
$5_{00}2$	SPACECRAFT SEPERATION SW	SEP SW	DIG B	1/1	OB28	17 02	4T11-40	5P30-H	5Z10-8
$5_{00}3$	UNFOLD TIMER 1 FIRED (2.5 SEC)	UF 1 2.5	DIG B	1/1	OB17	16 03	4T24-38	5P30-C	
$5_{00}4$	UNFOLD TIMER 2 FIRED (5.0 SEC)	UF 2 5.0	DIG B	1/1	OB18	17 03	4T24-48	5P30-E	

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6000 - POWER SUBSYSTEM

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	BATTERIES 1 THRU 8								
6001	BATTERY 1 DISCHARGE CURRENT	BAT1 DIS	ANOG	1/16	A491	08 08	4T07-23	1P04-02	
6002	BATTERY 2 DISCHARGE CURRENT	BAT2 DIS	ANOG	1/16	A508	10 17	4T05-1	1P03-02	
6003	BATTREY 3 DISCHARGE CURRENT	BAT3 DIS	ANOG	1/16	A410	02 29	4T01-13	1P21-02	
6004	BATTERY 4 DISCHARGE CURRENT	BAT4 DIS	ANOG	1/16	A542	15 35	4T05-37	2P15-02	
6005	BATTERY 5 DISCHARGE CURRENT	BAT5 DIS	ANOG	1/16	A012	18 44	4T02-13	3P04-02	
6006	BATTERY 6 DISCHARGE CURRENT	BAT6 DIS	ANOG	1/16	A029	01 54	4T02-31	4P03-02	
6007	BATTERY 7 DISCHARGE CURRENT	BAT7 DIS	ANOG	1/16	A559	02 63	4T05-55	4P09-02	
6008	BATTERY 8 DISCHARGE CURRENT	BAT8 DIS	ANOG	1/16	A576	08 72	4T05-72	4P15-02	
6011	BATTERY 1 CHARGE CURRENT	BAT1 CHG	ANOG	1/16	A361	10 08	4T03-02	1P04-03	
6012	BATTERY 2 CHARGE CURRENT	BAT2 CHG	ANOG	1/16	A378	12 17	4T03-19	1P03-03	
6013	BATTERY 3 CHARGE CURRENT	BAT3 CHG	ANOG	1/16	A395	15 26	4T03-36	1P21-03	
6014	BATTERY 4 CHARGE CURRENT	BAT4 CHG	ANOG	1/16	A412	18 35	4T01-15	2P15-03	
6015	BATTERY 5 CHARGE CURRENT	BAT5 CHG	ANOG	1/16	A046	01 45	4T02-48	3P04-03	
6016	BATTERY 6 CHARGE CURRENT	BAT6 CHG	ANOG	1/16	A063	15 78	4T02-66	4P03-03	
6017	BATTERY 7 CHARGE CURRENT	BAT7 CHG	ANOG	1/16	A429	08 63	4T01-33	4P09-03	
6018	BATTERY 8 CHARGE CURRENT	BAT8 CHG	ANOG	1/16	A446	10 72	4T01-50	4P15-03	
6021	BATTERY 1 VOLTAGE	BAT1 VLT	ANOG	1/16	A425	12 08	4T01-29	1P04-04	
6022	BATTERY 2 VOLTAGE	BAT2 VLT	ANOG	1/16	A442	15 17	4T01-46	1P03-04	
6023	BATTERY 3 VOLTAGE	BAT3 VLT	ANOG	1/16	A459	18 26	4T01-64	1P21-04	
6024	BATTERY 4 VOLTAGE	BAT4 VLT	ANOG	1/16	A476	01 36	4T07-8	2P15-04	
6025	BATTERY 5 VOLTAGE	BAT5 VLT	ANOG	1/16	A080	02 45	4T04-11	3P04-04	
6026	BATTERY 6 VOLTAGE	BAT6 VLT	ANOG	1/16	A081	08 54	4T04-12	4P03-04	
6027	BATTERY 7 VOLTAGE	BAT7 VLT	ANOG	1/16	A493	10 63	4T07-2	4P09-04	
6028	BATTERY 8 VOLTAGE	BAT8 VLT	ANOG	1/16	A510	12 72	4T05-4	4P15-04	
6031	BATTERY NO. 1 TEMPERATURE	BAT1 TMP	ANOG	1/16	A366	15 08	4T03-7	1P04-05	
6032	BATTERY NO. 2 TEMPERATURE	BAT2 TMP	ANOG	1/16	A383	18 17	4T03-24	1P03-05	
6033	BATTERY NO. 3 TEMPERATURE	BAT3 TMP	ANOG	1/16	A400	01 27	4T01-3	1P21-05	
6034	BATTERY NO. 4 TEMPERATURE	BAT4 TMP	ANOG	1/16	A537	02 36	4T05-32	2P15-05	
6035	BATTERY NO. 5 TEMPERATURE	BAT5 TMP	ANOG	1/16	A098	08 45	4T04-29	3P04-05	
6036	BATTERY NO. 6 TEMPERATURE	BAT6 TMP	ANOG	1/16	A115	10 54	4T06-8	4P03-05	
6037	BATTERY NO. 7 TEMPERATURE	BAT7 TMP	ANOG	1/16	A554	12 63	4T05-49	4P09-05	
6038	BATTERY NO. 8 TEMPERATURE	BAT8 TMP	ANOG	1/16	A571	15 72	4T05-67	4P15-05	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	SOLAR ARRAY 5_{02} (RIGHT)								
6_{040}	5_{01} PADDLE TEMPERATURE	RT PAD T	ANOG	1/16	A_{132}	08 36	$4T_{06}$-26	74_{17}-P	$5Z_{15}$-3_1 (4P02)
6_{041}	5_{02} PADDLE VOLTAGE (N)	RPAD V N	ANOG	1/16	A_{149}	12 45	$4T_{06}$-43	74_{17}-R	$5Z_{15}$-28 (4P02)
6_{042}	5_{02} PADDLE VOLTAGE (M)	RPAD V M	ANOG	1/16	A_{166}	12 36	$4T_{06}$-6_1	74_{17}-S	$5Z_{15}$-29 (4P02)
	SOLAR ARRAY 5_{01} (LEFT)								
6_{044}	5_{01} PADDLE TEMPERATURE	LT PAD T	ANOG	1/16	A_{183}	10 45	$4T_{08}$-5	74_{27}-P	$5Z_{15}$-3_0 (4P02)
6_{045}	5_{01} PADDLE VOLTAGE (F)	LPAD V F	ANOG	1/16	A_{217}	10 36	$4T_{08}$-39	74_{27}-S	$5Z_{15}$-27 (4P02)
6_{046}	5_{01} PADDLE VOLTAGE (G)	LPAD V G	ANOG	1/16	A_{234}	15 45	$4T_{10}$-18	74_{27}-R	$5Z_{15}$-26 (4P02)
	POWER CONTROL MODULE (PCM)								
6_{050}	UNREGULATED BUS VOLTAGE	UR BUS V	ANOG	1/16	A368	18 08	$4T_{03}$-9	$2P_{03}$-04	
6_{051}	REGULATED BUS VOLTAGE	RG BUS V	ANOG	1/16	A369	02 18	$4T_{03}$-10	$2P_{03}$-05	
6_{052}	AUXILIARY REGULATOR (A) VOLTAGE	AUX A V	ANOG	1/16	A386	01 18	$4T_{03}$-27	$2P_{03}$-06	
6_{053}	AUXILIARY REGULATOR (B) VOLTAGE	AUX B V	ANOG	1/16	A_{403}	02 27	$4T_{01}$-6	$2P_{03}$-07	
6_{054}	SOLAR ARRAY CURRENT	SOLAR I	ANOG	1/16	A_{420}	01 09	$4T_{01}$-24	$2P_{03}$-08	
6_{055}	REGULATED BUS CURRENT	RG BUS I	ANOG	1/1	A437	11 00	$4T_{01}$-41	$2P_{03}$-09	FM10
6_{056}	REGULATED BUS CURRENT	RG BUS I	ANOG	1/1	A437	04 03	$4T_{01}$-41	$2P_{03}$-09	
6_{058}	PCM THERMISTOR NO. 43 HOT SPOT (RT1)	PCMOD T1	ANOG	1/16	A_{033}	01 22	$4T_{02}$-35	$5T_{04}$-36	
6_{059}	PCM THERMISTOR NO. 35 MODULE TEMP (RT2)	PCMOD T2	ANOG	1/16	A_{050}	02 31	$4T_{02}$-52	$5T_{12}$-11	
6_{060}	TRICKLE CHARGE OVERRIDE/NORMAL	TRKL CHG	DIG B	1/16	0B29	18 02	$4T_{11}$-5_0	$2P_{03}$-15	
6_{061}	PWM REGULATOR 1/2	PWM REG	DIG B	1/16	$0B_07$	18 00	$4T_{16}$-64	$2P_{03}$-02	$5Z_{10}$-9
	PAYLOAD REGULATOR MODULE (PRM)								
6_{070}	PAYLOAD REG. BUS VOLTAGE	PRG BS V	ANOG	1/16	$A5_05$	02 23	$4T_{07}$-37	$1P_{09}$-05	
6_{071}	PAYLOAD UNREG. BUS VOLTAGE	PUR BS V	ANOG	1/16	A522	10 32	$4T_{05}$-16	$1P_{09}$-04	
6_{072}	PAYLOAD REG. BUS CURRENT	PRG BS I	ANOG	1/1	A539	11 02	$4T_{05}$-34	$1P_{09}$-09	FM10
6_{073}	PAYLOAD AUX. REG. VOLTAGE A	PAUX A V	ANOG	1/16	A556	08 32	$4T_{05}$-51	$1P_{09}$-06	
6_{074}	PAYLOAD AUX. REG. VOLTAGE B	PAUX B V	ANOG	1/16	A573	10 41	$4T_{05}$-69	$1P_{09}$-07	
6_{075}	PRM THERMISTOR NO. 38 TOP OUTBOARD	PRMOD T1	ANOG	1/16	A_{067}	02 22	$4T_{02}$-7$_0$	$5T_{12}$-17	
6_{076}	PRM THERMISTOR NO.69 CENTER INBOARD	PRMOD T2	ANOG	1/16	A_{084}	08 31	$4T_{04}$-15	$5T_{20}$-18	
6_{077}	PWM REGULATOR 3/4	PWM REG	DIG B	1/16	$0B_06$	15 00	$4T_{16}$-53	$1P_{09}$-02	$5Z_{10}$-10
6_{079}	PAYLOAD FUSE BLOW BUS VOLTAGE	SEE PSM							
6_{100}	PAYLOAD REG. BUS CURRENT	PRG BS I	ANOG	1/1	A539	17 04	$4T_{05}$-34	$1P_{09}$-09	
6_{101}	PRM IN RELAY CONFIGUR. MIXED/COMM	SEE PSM							

7000 - THERMAL SUBSYSTEM

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	THERMAL SUBSYSTEM								
7_{001}	SEPARATOR NO. 2, BOTTOM MIDDLE	TH02SBM	ANOG	1/16	A_{008}	15 11	$4T_{02}$-9	$5T_{04}$-07	
7_{002}	SEPARATOR NO. 1, BOTTOM OUTBOARD	TH01SBO	ANOG	1/16	A_{024}	18 11	$4T_{02}$-26	$5T_{12}$-07	
7_{003}	SEPARATOR NO. 3, BOTTOM INBOARD	TH03SBI	ANOG	1/16	A_{040}	01 12	$4T_{02}$-42	$5T_{20}$-07	
7_{004}	TEMP CONTROL BELLOWS NO.10	TH10TCB	ANOG	1/16	A_{025}	02 12	$4T_{02}$-27	$5T_{04}$-25	
7_{005}	SEPARATOR NO. 11, BOTTOM MIDDLE	TH11SBM	ANOG	1/16	A_{056}	08 12	$4T_{02}$-58	$5T_{12}$-25	
7_{006}	SEPARATOR NO. 5, BOTTOM OUTBOARD	TH05SBO	ANOG	1/16	A_{072}	10 12	$4T_{04}$-3	$5T_{20}$-25	
7_{007}	REAR BULKHEAD OAS -X THRUSTER	THOAS-X	ANOG	1/16	A_{042}	12 12	$4T_{02}$-44	$5T_{04}$-26	
7_{008}	TEMP CONTROL BELLOWS NO. 2	TH02TCB	ANOG	1/16	A_{088}	15 12	$4T_{04}$-19	$5T_{12}$-26	
7_{009}	SEPARATOR NO.7, BOTTOM MIDDLE	TH07SBM	ANOG	1/16	A_{104}	18 20	$4T_{04}$-35	$5T_{20}$-26	
7_{010}	SEPARATOR NO.8, BOTTOM INBOARD	TH08SBI	ANOG	1/16	A_{120}	01 21	$4T_{06}$-13	$5T_{04}$-19	
7_{011}	SEPARATOR NO.9, BOTTOM MIDDLE	TH09SBM	ANOG	1/16	A_{136}	02 21	$4T_{06}$-30	$5T_{12}$-19	
7_{012}	SEPARATOR NO.10, BOTTOM OUTBOARD	TH10SBO	ANOG	1/16	A_{152}	08 21	$4T_{06}$-46	$5T_{20}$-19	
7_{013}	SEPARATOR NO.4, BOTTOM MIDDLE	TH04SBM	ANOG	1/16	A_{168}	10 21	$4T_{06}$-63	$5T_{04}$-35	
7_{014}	SEPARATOR NO.11, TOP OUTBOARD	TH11STO	ANOG	1/16	A_{184}	12 21	$4T_{08}$-6	$5T_{12}$-35	
7_{015}	SEPARATOR NO.12, BOTTOM INBOARD	TH12SBI	ANOG	1/16	A_{200}	15 21	$4T_{08}$-22	$5T_{20}$-35	
7_{016}	SEPARATOR NO.12, TOP OUTBOARD	TH12STO	ANOG	1/16	A_{216}	18 21	$4T_{08}$-38	$5T_{04}$-33	
7_{017}	RAV BEAM CENTER LINE	THRBVCL	ANOG	1/16	A_{059}	01 30	$4T_{02}$-62	$5T_{12}$-33	
7_{018}	SEPARATOR NO.13, BOTTOM MIDDLE	TH13SBM	ANOG	1/16	A_{232}	02 30	$4T_{10}$-16	$5T_{20}$-33	
7_{019}	NBTR RADIATOR BAY 4 OUTBOARD	TH04NBR	ANOG	1/16	A_{076}	08 30	$4T_{04}$-7	$5T_{04}$-31	
7_{020}	SEPARATOR NO.13, TOP MIDDLE	TH13STM	ANOG	1/16	A_{248}	10 30	$4T_{10}$-33	$5T_{12}$-31	
7_{021}	SEPARATOR NO.14, BOTTOM INBOARD	TH14SBI	ANOG	1/16	A_{264}	12 30	$4T_{10}$-49	$5T_{20}$-31	
7_{022}	SEPARATOR NO.14, TOP OUTBOARD	TH14STO	ANOG	1/16	A_{280}	15 30	$4T_{10}$-66	$5T_{04}$-29	
7_{023}	SEPARATOR NO.15, BOTTOM MIDDLE	TH15SBM	ANOG	1/16	A_{296}	18 30	$4T_{14}$-9	$5T_{12}$-29	
7_{030}	SEPARATOR NO.15, TOP OUTBOARD	TH15STO	ANOG	1/16	A_{093}	01 31	$4T_{04}$-24	$5T_{20}$-29	
7_{031}	SEPARATOR NO.16, BOTTOM MIDDLE	TH16SBM	ANOG	1/16	A_{017}	02 57	$4T_{02}$-18	$5T_{04}$-16	
7_{032}	SEPARATOR NO.17, BOTTOM INBOARD	TH17SBI	ANOG	1/16	A_{179}	12 49	$4T_{06}$-74	$5T_{12}$-16	
7_{033}	TEMPERATURE CONTROL BELLOWS NO.5	TH05TCB	ANOG	1/16	A_{110}	10 39	$4T_{06}$-3	$5T_{20}$-16	
7_{034}	SEPARATOR NO.18, BOTTOM MIDDLE	TH18SBM	ANOG	1/16	A_{032}	01 29	$4T_{02}$-34	$5T_{04}$-14	
7_{035}	SEPARATOR NO.18, TOP MIDDLE	TH18STM	ANOG	1/16	A_{127}	15 39	$4T_{06}$-21	$5T_{12}$-14	
7_{040}	TEMPERATURE CONTROL BELLOWS NO.1	TH01TCB	ANOG	1/16	A_{312}	18 39	$4T_{14}$-26	$5T_{20}$-14	
7_{041}	SEPARATOR NO.6, TOP OUTBOARD	TH06STO	ANOG	1/16	A_{328}	01 40	$4T_{14}$-42	$5T_{04}$-12	
7_{042}	TEMPERATURE CONTROL BELLOWS NO.3	TH03TCB	ANOG	1/16	A_{344}	02 40	$4T_{14}$-59	$5T_{12}$-12	
7_{043}	TEMPERATURE CONTROL BELLOWS NO.4	TH04TCB	ANOG	1/16	A_{360}	08 48	$4T_{14}$-75	$5T_{20}$-12	
7_{044}	SEPARATOR NO.17, TOP OUTBOARD	TH17STO	ANOG	1/16	A_{010}	10 48	$4T_{02}$-11	$5T_{04}$-11	
7_{045}	TEMPERATURE CONTROL BELLOWS NO.7	TH07TCB	ANOG	1/16	A_{027}	12 48	$4T_{02}$-29	$5T_{20}$-11	
7_{046}	TEMPERATURE CONTROL BELLOWS NO.9	TH09TCB	ANOG	1/16	A_{044}	15 48	$4T_{02}$-46	$5T_{04}$-17	
7_{048}	TEMPERATURE CONTROL BELLOWS NO.11	TH11TCB	ANOG	1/16	A_{061}	18 48	$4T_{02}$-64	$5T_{20}$-17	
7_{049}	TEMPERATURE CONTROL BELLOWS NO.12	TH12TCB	ANOG	1/16	A_{078}	01 49	$4T_{04}$-9	$5T_{04}$-37	
7_{050}	TEMPERATURE CONTROL BELLOWS NO.13	TH13TCB	ANOG	1/16	A_{095}	02 49	$4T_{04}$-26	$5T_{12}$-37	
7_{051}	TEMPERATURE CONTROL BELLOWS NO.14	TH14TCB	ANOG	1/16	A_{112}	08 49	$4T_{06}$-5	$5T_{20}$-37	
7_{052}	TEMPERATURE CONTROL BELLOWS NO.16	TH16TCB	ANOG	1/16	A_{113}	10 57	$4T_{06}$-6	$5T_{12}$-36	
7_{053}	TEMPERATURE CONTROL BELLOWS NO.17	TH17TCB	ANOG	1/16	A_{130}	15 68	$4T_{06}$-24	$5T_{20}$-36	
7_{054}	TEMPERATURE CONTROL BELLOWS NO.18	TH18TCB	ANOG	1/16	A_{147}	15 57	$4T_{06}$-41	$5T_{04}$-34	
7_{060}	SHUTTER ASSEMBLY BAY NO.1	SH01	ANOG	1/16	A_{164}	12 11	$4T_{06}$-59	$5T_{04}$-23	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
7061	SHUTTER ASSEMBLY BAY NO.2	SH02	ANOG	1/16	A181	15 20	4T08-3	5T12-23	
7062	SHUTTER ASSEMBLY BAY NO.3	SH03	ANOG	1/16	A198	10 26	4T08-20	5T20-23	
7063	SHUTTER ASSEMBLY BAY NO.4	SH04	ANOG	1/16	A215	01 39	4T08-37	5T04-21	
7064	SHUTTER ASSEMBLY BAY NO.5	SH05	ANOG	1/16	A249	02 48	4T10-34	5T12-21	
7065	SHUTTER ASSEMBLY BAY NO.7	SH07	ANOG	1/16	A266	08 57	4T10-51	5T04-22	
7067	SHUTTER ASSEMBLY BAY NO.9	SH09	ANOG	1/16	A283	12 75	4T10-69	5T20-22	
7068	SHUTTER ASSEMBLY BAY NO.10	SH10	ANOG	1/16	A300	10 11	4T14-13	5T04-4	
7069	SHUTTER ASSEMBLY BAY NO11	SH11	ANOG	1/16	A317	12 20	4T14-31	5T12-4	
7070	SHUTTER ASSEMBLY BAY NO.12	SH12	ANOG	1/16	A334	08 26	4T14-48	5T20-4	
7071	SHUTTER ASSEMBLY BAY NO.13	SH13	ANOG	1/16	A351	18 38	4T14-66	5T04-3	
7072	SHUTTER ASSEMBLY BAY NO.14	SH14	ANOG	1/16	A016	01 48	4T02-17	5T12-3	
7074	SHUTTER ASSEMBLY BAY NO.16	SH16	ANOG	1/16	A034	02 66	4T02-36	5T04-2	
7075	SHUTTER ASSEMBLY BAY NO.17	SH17	ANOG	1/16	A051	10 75	4T02-54	5T12-2	
7076	SHUTTER ASSEMBLY BAY NO.18	SH18	ANOG	1/16	A068	08 11	4T02-71	5T20-2	
7080	T/M CONV. MOD.,01 THER. ZENER	ZNVQ1TH	ANOG	1/16	A085	10 20	4T04-16	5T04-20	
7081	T/M CONV. MOD.,02 THER. ZENER	ZNVQ2TH	ANOG	1/16	A102	02 26	4T04-33	5T12-20	
7082	T/M CONV. MOD.,03 THER. ZENER	ZNVQ3TH	ANOG	1/16	A119	15 38	4T06-12	5T20-20	
7083	T/M CONV. MOD.,01 SHUTTER ZENER	ZNVQ1SH	ANOG	1/16	A153	18 47	4T06-47	5T04-6	
7084	T/M CONV. MOD.,02 SHUTTER ZENER	ZNVQ2SH	ANOG	1/16	A170	01 57	4T06-65	5T12-6	
7085	T/M CONV. MOD.,03 SHUTTER ZENER	ZNVQ3SH	ANOG	1/16	A187	01 66	4T08-9	5T20-6	
7090	ECAM MOUNT	THECAMN	ANOG	1/16	A196	02 54	4T08-18	5T12-18	
7091	INDEPENDENT ATTITUDE SENSOR MTG.	THIASM	ANOG	1/16	A221	01 58	4T10-5	5T12-34	
7092	RBV RADIATOR	THRBVR	ANOG	1/16	A238	02 58	4T10-23	5T20-34	
7093	RBV CAMERA SUPPORT BEAM (CENTER)	THRBVBC	ANOG	1/16	A255	08 58	4T10-40	5T20-32	
7094	WBVTR RADIATOR (ROOT)	THWBRRP	ANOG	1/16	A272	10 58	4T10-58	5T04-32	
7095	WBVTR RADIATOR (CENTER)	THWBRRC	ANOG	1/16	A273	12 66	4T10-59	5T12-32	
7096	WBVTR HEAT STRAP	THWBRHS	ANOG	1/16	A290	15 66	4T14-3	5T12-10	
7097	WB ELECTRONICS MOUNT OVER BAY NO.1	TH01WBE	ANOG	1/16	A307	18 66	4T14-20	5T20-10	
7098	WB ELECTRONICS MOUNT OVER BAY NO.18	TH18WBE	ANOG	1/16	A324	01 67	4T14-38	5T04-18	
7099	WBVTR 1, INBOARD OF SEPARATOR 3	TH03WBR	ANOG	1/16	A341	02 67	4T14-56	5T04-30	
7100	WBVTR 1, INBOARD OF SEPARATOR 17	TH17WBR	ANOG	1/16	A358	08 67	4T14-73	5T12-30	
7101	WBVTR 1, CENTER	THC1WBR	ANOG	1/16	A144	10 67	4T06-38	5T20-30	
7102	WBVTR 2, INBOARD OF BAY 4	TH04WBR	ANOG	1/16	A145	12 67	4T06-39	5T04-28	
7103	WBVTR 2, BEAM INBOARD OF BAY 15	TH15WBR	ANOG	1/16	A162	15 75	4T06-57	5T12-28	
7104	WBVTR 2, BEAM CENTER	THC2WBR	ANOG	1/16	A213	18 75	4T08-35	5T20-28	
7105	NBTR BEAM INBOARD OF SEPARATOR NO.6	TH06NBR	ANOG	1/16	A230	01 76	4T10-14	5T04-15	
7106	NBTR BEAM INBOARD OF SEPARATOR NO.14	TH14NBR	ANOG	1/16	A247	02 76	4T10-32	5T12-15	
7107	NBTR BEAM CENTER	THCBNBR	ANOG	1/16	A281	08 76	4T10-67	5T20-15	
7108	MSS MOUNT NEAR SEPARATOR NO.14	TH14MSS	ANOG	1/16	A298	10 76	4T14-11	5T04-13	
7109	REAR BULKHEAD OAS -Y THRUSTER	TH-YOAS	ANOG	1/16	A315	12 76	4T14-29	5T12-13	
7110	MSS MOUNT NEAR CENTER OF WBVTR BEAM	THCWMSS	ANOG	1/16	A332	15 76	4T14-46	5T20-13	
7111	REAR BULKHEAD OAS +X THRUSTER	TH+XOAS	ANOG	1/16	A349	10 66	4T14-64	5T04-10	
7130	AUX. LOAD PANEL 1, TEMP.	SEE ISM							
7131	AUX. LOAD PANEL 2, TEMP.	SEE ISM							

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8000, 9000, 10000, 11000, 12000, 13000
COMMUNICATIONS AND DATA HANDLING
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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	COMMAND CLOCK (CLK)								
8001	PRIMARY W CHANNEL UNPUT (DATA)	PRI W IN	ANOG	1/16	A370	02 11	4T03-11	2C13-37	
8002	PRIMARY X CHANNEL INPUT (STROBE)	PRI X IN	ANOG	1/16	A387	08 20	4T03-28	2C13-36	
8003	REDUNDANT W CHANNEL INPUT (DATA)	RED W IN	ANOG	1/16	A404	18 10	4T01-7	2C13-08	
8004	REDUNDANT X CHANNEL INPUT (STROBE)	RED X IN	ANOG	1/16	A421	01 20	4T01-25	2C13-23	
8005	PRIMARY POWER SUPPLY TEMPERATURE	PPS TEMP	ANOG	1/16	A438	18 29	4T01-42	2C13-30	
8006	REDUNDANT POWER SUPPLY TEMPERATURE	RPS TEMP	ANOG	1/16	A455	12 29	4T01-60	2C13-29	
8007	PRIMARY OSCILLATOR TEMPERATURE	POSC TMP	ANOG	1/16	A489	12 38	4T07-21	2C13-33	
8008	REDUNDANT OSCILLATOR TEMPERATURE	ROSC TMP	ANOG	1/16	A506	08 38	4T07-38	2C13-32	
8009	PRIMARY OSCILLATOR OUTPUT	POSC OUT	ANOG	1/16	A523	15 47	4T05-17	2C13-31	
8010	REDUNDANT OSCILLATOR OUTPUT	ROSC OUT	ANOG	1/16	A540	10 47	4T05-35	2C13-28	
8011	100 KHZ MASTER CLOCK	100KHZ	ANOG	1/16	A557	12 47	4T05-53	2C13-18	
8012	10KHZ	10KHZ	ANOG	1/16	A574	15 56	4T05-70	2C13-09	
8013	2.5 KHZ	2.5 KHZ	ANOG	1/16	A371	15 65	4T03-12	2C13-34	
8014	400 HZ PH A/PH B	400HZ AB	ANOG	1/16	A388	02 75	4T03-29	2C13-22	
8015	PRIMARY +4 VDC	PRI +4V	ANOG	1/16	A405	18 56	4T01-8	2C13-04	
8016	REDUNDANT +4 VDC	RED +4V	ANOG	1/16	A422	12 56	4T01-26	2C13-11	
8017	PRIMARY +6.0 VDC	PRI +6V	ANOG	1/16	A439	18 65	4T01-43	2C13-10	
8018	REDUNDANT +6.0 VDC	RED +6V	ANOG	1/16	A473	12 65	4T07-5	2C13-05	
8019	PRIMARY -6.0 VDC	PRI -6V	ANOG	1/16	A490	08 75	4T07-22	2C13-15	
8020	REDUNDANT -6.0 VDC	RED -6V	ANOG	1/16	A507	01 75	4T07-39	2C13-06	
8021	PRIMARY 023 VDC	PRI -23V	ANOG	1/16	A524	01 11	4T05-18	2C13-01	
8022	REDUNDANT -23 VDC	RED -23V	ANOG	1/16	A541	15 29	4T05-36	2C13-02	
8023	PRIMARY -29 VDC	PRI -29V	ANOG	1/16	A558	02 20	4T05-54	2C13-13	
8024	REDUNDANT -29 VDC	RED -29V	ANOG	1/16	A575	10 38	4T05-71	2C13-03	
8025	PRIMARY POWER SUPPLY ON/OFF	PPWR SUP	DIG R	1/16	7B32	10 03	4T17-36	2C11-17	
8026	REDUNDANT POWER SUPPLY ON/OFF	RPWR SUP	DIG R	1/16	1B03	02 00	4T16-13	2C11-33	5Z10-11
8027	POWER SUPPLY SELECT PRI./RED.	PWR SLCT	DIG R	1/16	0B04	10 00	4T16-32	2C11-16	5Z10-12
8028	PRIMARY COMSTOR ON/OFF	PCOMSTOR	DIG R	1/16	1B08	01 01	4T20-4	2C11-19	5Z10-13
8029	REDUNDANT COMSTOR ON/OFF	RCOMSTOR	DIG R	1/16	0B03	08 00	4T16-22	2C11-36	5Z10-14
8030	MATRIX DECODER PRIMARY/REDUNDANT	MTX DCDR	DIG R	1/16	0B05	12 00	4T16-42	2C11-08	5Z10-15
8031	MATRIX DRIVER A PRIMARY/REDUNDANT	MTX DR A	DIG R	1/16	1B13	01 02	4T20-56	2C11-02	5Z10-16
8032	MATRIX DRIVER B PRIMARY/REDUNDANT	MTX DR B	DIG R	1/16	0B11	12 01	4T20-34	2C11-24	5Z10-17
8033	FREQUENCY GEN. PRIMARY/REDUNDANT	FREQ GEN	DIG R	1/16	0B22	08 01	4T09-17	2C11-09	
8034	SELECT OSCILLATOR PRIMARY/REDUNDANT	OSC SLCT	DIG R	1/16	0B10	10 01	4T20-24	2C11-34	5Z10-18
8035	SERIAL DATA TRANSFER YES/NO	SER DATA	DIG R	1/16	0B25	08 02	4T11-10	2C11-35	
8036	SERIAL DATA ERROR YES/NO	DATA ERR	DIG R	1/16	0B31	08 03	4T17-18	2C11-18	
8037	1 HZ (A) YES/NO	1HZ (A)	DIG R	1/16	1B30	01 03	4T17-8	2C13-19	
8038	1 HZ (B) YES/NO	1HZ (B)	DIG R	1/16	3B23	18 01	4T09-30	2C13-07	
8039	PRIMARY Y CHAN. INPUT(ENABLE) YES/NO	PRI Y IN	DIG R	5/1	6B21	14 00	4T09-13	2C13-20	
8040	REDUN. Y CHAN. INPUT(ENABLE) YES/NO	RED Y IN	DIG R	5/1	9B21	14 00	4T09-16	2C13-21	
8041	COMMAND EXECUTE COUNTER BIT 1	CMD EX 1	DIG R	1/1	1B27	16 02	4T11-31	2C11-12	
	SEE FUNC. NO. 8058								

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
8_042	COMMAND EXECUTE COUNTER BIT 2	CMD EX 2	DIG B	1/1	2B27	$16\ 0^2$	$4T_{11}$-32	$2C_{11}$-26	
8_043	COMMAND EXECUTE COUNTER BIT 4	CMD EX 4	DIG B	1/1	3B27	$16\ 0^2$	$4T_{11}$-33	$2C_{11}$-27	
8_044	COMMAND EXECUTER COUNTER BIT 8	CMD EX 8	DIG B	1/1	4B27	$16\ 0^2$	$4T_{11}$-34	$2C_{11}$-13	
8_045	COMMAND EXECUTE COUNTER BIT 1^6	CMD EX16	DIG B	1/1	5B27	$16\ 0^2$	$4T_{11}$-35	$2C_{11}$-14	
8_046	COMMAND EXECUTE COUNTER BIT 32	CMD EX32	DIG B	1/1	6B27	$16\ 0^2$	$4T_{11}$-36	$2C_{11}$-29	
8_047	PRIMARY COMSTOR FILL YES/NO	PCOMSTRF	DIG B	1/1	1B28	$17\ 0^2$	$4T_{11}$-41	$2C_{11}$-21	
8_048	REDUNDANT COMSTOR FILL YES/NO	RCOMSTRF	DIG B	1/1	1B19	$16\ 0^4$	4T24-59	$2C_{11}$-22	$5Z_{10}$-19
8_049	PRIMARY COMSTOR ACTIVATE YES/NO	PCOMSTRA	DIG B	1/1	0B19	$16\ 0^4$	4T24-58	$2C_{11}$-10	$5Z_{10}$-20
8_050	REDUNDANT COMSTOR ACTIVATE YES/NO	RCOMSTRA	DIG B	1/1	2B18	$17\ 0^3$	$4T_{24}$-5_0	$2C_{11}$-23	$5Z_{10}$-21
8_051	PRIMARY COMSTOR VERIFY YES/NO	PCOMSTRV	DIG B	1/1	1B17	$16\ 0^3$	4T24-39	$2C_{11}$-28	$5Z_{10}$-22
8_052	REDUNDANT COMSTOR VERIFY YES/NO	RCOMSTRV	DIG B	1/1	2B28	$17\ 0^2$	$4T_{11}$-42	$2C_{11}$-11	
8_053	PRIMARY COMDEC IN-SYNC YES/NO SEE FUNC. NO. 8_059	PCD SYNC	DIG B	1/1	1B18	$17\ 0^3$	4T24-49	$2C_{11}$-01	$5Z_{10}$-23
8_054	REDUNDANT COMDEC IN-SYNC YES/NO	RCD SYNC	DIG B	1/1	2B17	$16\ 0^3$	$4T_{24}$-4_0	$2C_{11}$-03	$5Z_{10}$-24
8_055	PRIMARY COMDEC DATA ERROR YES/NO	PCD ERR	DIG B	5/1	0B21	14 00	$4T_09$-7	$2C_{11}$-2_0	
8_056	REDUNDANT COMDEC DATA ERROR YES/NO	RCD ERR	DIG B	5/1	3B21	14 00	$4T_09$-10	$2C_{11}$-37	
8_057	TICK/TOCK TIC/TOC	SEE ALC							
8_058	COMMAND EXECUTE COUNTER BIT 1 SEE FUNC. NO. 8_041	CMD EX_1	DIG B	5/1	8B21	14 00	$4T_09$-15	$2C_{11}$-12	
8_059	PRIMARY COMDEC IN SYNC YES/NO SEE FUNC. NO. 8_053	PCD SYNC	DIG B	5/1	7B21	14 00	$4T_09$-14	$2C_{11}$-01	
8_060	SEP SWITCH 1 BYPASS NO/YES	SEE ISM							
8_061	SEP SWITCH 2 BYPASS NO/YES	SEE ISM							
8_062	CLOCK FUSED PWR. PRI/RED	SEE ISM							
	COMMAND INTERGRATOR UNIT (CIU)								
8_101	-12V MONITOR A	CIUA-12V	ANOG	1/16	A286	10 29	$4T_{10}$-72	2C48-05	
8_102	-12V MONITOR B	CIUB-12V	ANOG	1/16	$A3_03$	02 52	4T14-16	$2C_50$-05	
8_103	-5V MONITOR A	CIUA-5V	ANOG	1/16	$A32_0$	18 74	4T14-34	2C48-06	
8_104	-5V MONITOR B	CIUB-5V	ANOG	1/16	A321	08 61	4T14-35	$2C_50$-06	
8_105	TEMPERATURE A	CIU A T	ANOG	1/16	A338	02 36	4T14-52	2C48-07	
8_106	TEMPERATURE B	CIU B T	ANOG	1/16	A355	12 78	$4T14$-7_0	$2C_50$-07	
8_107	CHANNEL A ON/OFF	CHANNL A	DIG B	1/16	$1B_03$	08 00	4T16-23	2C48-01	
8_108	CHANNEL B ON/OFF	CHANNL B	DIG B	1/16	3B15	12 02	4T24-21	$2C_50$-01	
8_109	COMMAND INPUT A CLK/CIU	CMD IN A	DIG B	5/1	2B21	14 00	$4T_09$-9	2C48-02	$5Z_{10}$-25
8_110	COMMAND INPUT B CLK/CIU	CMD IN B	DIG B	1/1	3B17	$16\ 0^3$	4T24-41	$2C_50$-02	
8_111	MSFN ENABLE A YES/NO	MSF A EN	DIG B	1/1	3B18	$17\ 0^3$	$4T24$-5_1	2C48-03	
8_112	MSFN ENABLE B YES/NO	MSF B EN	DIG B	1/1	2B19	$16\ 0^4$	$4T24$-6_0	$2C_50$-03	
8_113	MSFN STADAN CHANNEL A/B B/A	SEE ISM							

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	VHF COMMAND RECIEVER (VHFR)								
82-01	TEMPERATURE RF/IF A	RF A T	ANLOG	1/16	A-058	15 41	4T02-61	2C06-35	
82-02	TEMPERATURE RF/IF B	RF B T	ANLOG	1/16	A-075	12 10	4T04-6	2C06-37	
82-03	TEMPERATURE DEMOD A	DMOD A T	ANLOG	1/16	A-092	15 74	4T04-23	2C06-02	
82-04	TEMPERATURE DEMOD B	DMOD B T	ANLOG	1/16	A-109	15 19	4T06-1	2C06-05	
82-05	AGC RECIEVER A	RCVA AGC	ANLOG	1/1	A-126	04 00	4T06-19	2C06-07	
82-06	AGC RECIEVER B	RCVB AGC	ANLOG	1/1	A-143	05 00	4T06-37	2C06-09	
82-07	AUDIO AMPLIFIER A OUTPUT	AMPA OUT	ANLOG	1/16	A-160	08 29	4T06-55	2C06-11	
82-08	AUDIO AMPLIFIER B OUTPUT	AMPB OUT	ANLOG	1/16	A-161	01 38	4T06-56	2C06-13	
82-09	FSK DEMODULATOR A OUTPUT	FSKA OUT	ANLOG	1/16	A-178	02 47	4T06-73	2C06-15	
82-10	FSK DEMODULATOR B OUTPUT	FSKB OUT	ANLOG	1/16	A-195	10 65	4T08-17	2C06-17	
82-11	AM MODULATOR A OUTPUT	AM A OUT	ANLOG	1/16	A-212	08 56	4T08-34	2C06-19	
82-12	AM MODULATOR B OUTPUT	AM B OUT	ANLOG	1/16	A-229	12 74	4T10-13	2C06-21	
82-13	SUBCARRIER LEVEL DET A OUTPUT	DETA OUT	ANLOG	1/1	A-246	11 03	4T10-31	2C06-23	FM10
82-14	SUBCARRIER LEVEL DET B OUTPUT	DETB OUT	ANLOG	1/1	A-263	13 02	4T10-48	2C06-25	FM10
82-15	-15.7V DEMOD POWER A	DMDA-15	ANLOG	1/16	A-297	15 70	4T14-10	2C06-27	
82-16	-15.7V DEMOD POWER B	DMDB-15V	ANLOG	1/16	A-314	15 79	4T14-28	2C06-29	
82-17	-10 REG VOLTS A	REGA-10V	ANLOG	1/16	A-331	15 04	4T14-45	2C06-31	
82-18	-10 REG VOLTS B	REGB-10V	ANLOG	1/16	A-348	15 13	4T14-63	2C06-33	
82-19	REC/DEMOD POWER A/B	R/D SLCT	DIG B	1/16	1B06	15 00	4T16-54	2C06-04	
82-20	REC/DEMOD POWER B/A	SLCT R/D	DIG B	1/16	8B13	01 02	4T24-6	2C06-06	
	ECAM								
83-01	ECAM ON/OFF	ECAM	DIG B	1/16	0B23	18 01	4T09-27	1C05-2	
83-02	ECAM OUTPUT ENA/DIS	ECAM OUT	DIG B	1/16	6R31	08 03	4T17-24	1C05-1	
83-03	ECAM INHIBIT YES/NO	ECAM INH	DIG B	5/1	5R21	14 00	4T09-12	1C05-6	
83-04	ECAM EXECUTE/LOAD	ECAM EXC	DIG B	1/1	9B27	16 02	4T11-39	1C05-4	
83-05	ECAM RUN A/B	ECAM RUN	DIG B	1/1	7R17	16 03	4T24-45	1C05-5	5Z10-26
83-06	ECAM PROGRAM/COMMAND	ECAM PGM	DIG B	1/1	3R28	17 02	4T11-43	1C05-3	
83-11	ECAM MEMORY TEMPERATURE	MEMORY T	ANLOG	1/16	A-456	01 16	4T01-61	1C05-8	
83-12	ECAM POWER SUPPLY TEMP.	PWR SP T	ANLOG	1/16	A-472	12 39	4T07-4	1C05-7	
17-10	ECAM VERIFY SLOW	ECAM VFY	DIG A	1/1	DA07	11 04	4T15-1	1C11-7	FM10
17-11	ECAM VERIFY SLOW	ECAM VFY	DIG A	1/1	DA07	13 04	4T15-1	1C11-7	FM10
17-12	ECAM VERIFY FAST	ECAM VFY	DIG A	5/1	DA07	11 00	4T15-1	1C11-7	FM00
17-13	ECAM VERIFY FAST	ECAM VFY	DIG A	5/1	DA07	13 00	4T15-1	1C11-7	FM00

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	TELEMETRY PROCESSOR (TMP)								
9001	POWER SUPPLY A +5V	PSA +5V	ANLOG	1/16	A009	08 10	4T02-10	4T18-3	
9002	POWER SUPPLY B +5V	PSB +5V	ANLOG	1/16	A026	10 10	4T02-28	4T18-4	
9003	POWER SUPPLY A +15V	PSA +15V	ANLOG	1/16	A043	15 28	4T02-45	4T18-7	
9004	POWER SUPPLY B +15V	PSB +15V	ANLOG	1/16	A060	18 28	4T02-63	4T18-8	
9005	POWER SUPPLY A -6V	PSA -6V	ANLOG	1/16	A077	15 37	4T04-8	4T18-27	
9006	POWER SUPPLY B -6V	PSB -6V	ANLOG	1/16	A094	18 37	4T04-25	4T18-28	
9007	POWER SUPPLY A -15V	PSA -15V	ANLOG	1/16	A111	01 56	4T06-4	4T18-29	
9008	POWER SUPPLY B -15V	PSB -15V	ANLOG	1/16	A128	02 56	4T06-22	4T18-30	
9009	POWER SUPPLY A -22V	PSA -22V	ANLOG	1/16	A129	02 65	4T06-23	4T18-31	
9010	POWER SUPPLY B -22V	PSB -22V	ANLOG	1/16	A146	08 65	4T06-40	4T18-32	
9011	POWER SUPPLY A +6V	PSA +6V	ANLOG	1/16	A163	08 74	4T06-58	4T18-34	
9012	POWER SUPPLY B +6V	PSB +6V	ANLOG	1/16	A180	10 74	4T08-1	4T18-35	
9013	POWER SUPPLY A TEMP	PSA TEMP	ANLOG	1/16	A197	10 19	4T08-19	4T18-24	
9014	POWER SUPPLY B TEMP	PSB TEMP	ANLOG	1/16	A214	18 46	4T08-36	4T18-25	
9015	TEMPERATURE C	TEMP C	ANLOG	1/16	A231	15 67	4T10-15	4T18-26	
9021	POWER ON A/B	PWR SUP	DIG B	1/16	0B14	10 02	4T24-8	4T18-1	
9022	ANALOG MUX 1 ON A/B	ANA MUX1	DIG B	1/16	1B11	12 01	4T20-35	4T18-5	
9023	ANALOG MUX 2 ON A/B	ANA MUX2	DIG B	1/16	1B12	15 01	4T20-46	4T18-6	
9024	SERIAL MUX ON A/B	SER MUX	DIG B	1/16	1B07	18 00	4T16-65	4T18-9	
9025	BILEVEL MUX ON A/B	BIL MUX	DIG B	1/16	1B22	08 01	4T09-18	4T18-11	5Z10-27
9026	A/D ON A/B	A/D CONV	DIG B	1/16	1B23	18 01	4T09-28	4T18-13	5Z10-28
9027	CONTROL LOGIC ON A/B	CNTR LOG	DIG B	1/16	1B24	02 02	4T11-1	4T18-16	5Z10-29
9028	OUTPUT CIRCUIT ON A/B	OUTPUT	DIG B	1/16	0B26	15 02	4T11-20	4T18-18	5Z10-30
	VHF TRANSMITTER (VHFX)								
9100	REFLECTED POWER	REFL PWR	ANLOG	1/16	A373	02 10	4T03-14	3T03-03	
9101	TRANSMITTER A -20VDC OUTPUT	XMTA-20V	ANLOG	1/16	A390	08 19	4T03-31	3T03-23	
9102	TRANSMITTER B -20VDC OUTPUT	XMTB-20V	ANLOG	1/16	A407	12 28	4T01-10	3T03-09	
9103	TRANSMITTER A TEMPERATURE	XMTR A T	ANLOG	1/16	A424	12 37	4T01-28	3T03-01	
9104	TRANSMITTER B TEMPERATURE	XMTR B T	ANLOG	1/16	A528	12 57	4T05-23	3T03-14	
9105	XMTR A, RF POWER OUTPUT	A RF PWR	ANLOG	1/16	A441	02 43	4T01-45	3T03-16	
9106	XMTR B,RF POWER OUTPUT	B RF PWR	ANLOG	1/16	A458	18 55	4T01-63	3T03-18	
9109	POWER MODE A HIGH/LOW	PWR MD A	DIG B	1/16	1B31	08 03	4T17-19	3T03-12	
9110	STORED DATA INPUT NBTR1/NBTR2	STRD IN	DIG B	1/16	9B32	10 03	4T17-38	3T03-05	
9111	DATA INPUT REALTIME/STORED	DATA IN	DIG B	1/16	1B15	12 02	4T24-19	3T03-10	5Z10-31
9112	POWER MODE B HIGH/LOW	PWR MD B	DIG B	1/16	7B23	18 01	4T09-34	3T03-11	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	NARROWBAND TAPE RECORDER NO. 1								
10001	MOTOR CURRENT 1	MOTR I 1	ANOG	1/16	A463	15 55	4T01-68	5N03-*F	5Z09-04 5Z10-32
10002	POWER SUPPLY CURRENT 1	PS CUR 1	ANOG	1/16	A480	01 65	4T07-12	5N03-*J	5Z09-03 5Z10-33
10003	RECORDER TEMPERATURE 1	RCDR T 1	ANOG	1/16	A481	02 74	4T07-13	5N03-M	5Z09-02 5Z10-34
10004	POWER SUPPLY VOLTAGE 1	PS VLT 1	ANOG	1/16	A498	01 10	4T07-30	5N03-L	5Z09-01 5Z10-35
10005	RECORD MODE 1 ON/OFF	RECORD 1	DIG B	1/16	3B01	01 00	4T16-04	5N03-P	5Z09-13
10006	PLAYBACK MODE 1 ON/OFF	PLAYBK 1	DIG B	1/16	3B02	02 00	4T16-15	5N03-*E	5Z09-14
10007	RECORD END OF TAPE PRIMARY 1 YES/NO	REOT P 1	DIG B	1/16	3B03	08 00	4T16-25	5N03-R	5Z09-15
10008	RECORD END OF TAPE SECONDARY 1 YES/NO	REOT S 1	DIG B	1/16	3B04	10 00	4T16-35	5N03-S	5Z09-16
10009	PLAYBACK END OF TAPE PRIMARY 1 YES/NO	PEOT P 1	DIG B	1/16	3B05	12 00	4T16-46	5N03-T	5Z09-17
10010	PLAYBACK END OF TAPE SECONDARY 1 YES/NO	PEOT S 1	DIG B	1/16	3B06	15 00	4T16-56	5N03-V	5Z09-18
10011	RECORDER PRESSURE 1 LOW/NOR	RCDR P 1	DIG B	1/16	8B16	12 03	4T24-36	5N03-N	5Z09-12
	NARROWBAND TAPE RECORDER NO. 2								
10101	MOTOR CURRENT 2	MOTR I 2	ANOG	1/16	A515	02 19	4T05-09	5N04-*F	5Z09-23 5Z10-36
10102	POWER SUPPLY CURRENT 2	PS CUR 2	ANOG	1/16	A532	10 28	4T05-27	5N04-*J	5Z09-22 5Z10-37
10103	RECORDER TEMPERATURE 2	RCDR T 2	ANOG	1/16	A549	10 37	4T05-44	5N04-M	5Z09-21 5Z10-38
10104	POWER SUPPLY VOLTAGE 2	PS VLT 2	ANOG	1/16	A566	12 46	4T05-62	5N04-L	5Z09-20 5Z10-39
10105	RECORD MODE 2 ON/OFF	RECORD 2	DIG B	1/16	3B07	18 00	4T16-67	5N04-P	5Z09-32
10106	PLAYBACK MODE 2 ON/OFF	PLAYBK 2	DIG B	1/16	3B08	01 01	4T20-06	5N04-*E	5Z09-33
10107	RECORD END OF TAPE PRIMARY 2 YES/NO	REOT P 2	DIG B	1/16	3B09	02 01	4T20-17	5N04-R	5Z09-34
10108	RECORD END OF TAPE SECONDARY 2 YES/NO	REOT S 2	DIG B	1/16	3B22	08 01	4T09-20	5N04-S	5Z09-35 5Z10-40
10109	PLAYBACK END OF TAPE PRIMARY 2 YES/NO	PEOT P 2	DIG B	1/16	3B10	10 01	4T20-27	5N04-T	5Z09-36
10110	PLAYBACK END OF TAPE SECONDARY 2 YES/NO	PEOT S 2	DIG B	1/16	3B11	12 01	4T20-37	5N04-V	5Z09-37
10111	RECORDER PRESSURE 2 LOW/NOR	RCDR P 2	DIG B	1/16	1B26	15 02	4T11-21	5N04-N	5Z09-31 5Z10-41

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	UNIFIED S-BAND EQUIPMENT (USBE)								
11001	RECIEVER AGC VOLTAGE	RCVR AGC	ANLG	1/16	A_{509}	12 55	$4T_{05}$-02	$3U_{31}$-M	
11002	XMTR OUTPUT POWER LEVEL	XMTR PWR	ANLG	1/16	A_{526}	18 64	$4T_{05}$-21	$3U_{31}$-T	
11003	RECIEVER STATIC PHASE ERROR	RCVR SPR	ANLG	1/16	A_{543}	01 74	$4T_{05}$-38	$3U_{31}$-N	
11004	TRANSPONDER TEMPERATURE	TRSPDR T	ANLG	1/16	A_{376}	18 09	$4T_{03}$-17	$3U_{31}$-P	
11005	TRANSPONDER PRESSURE	TRSPDR P	ANLG	1/16	A_{560}	01 19	$4T_{05}$-56	$3U_{31}$-U	
11006	RECIEVER A/B	RECIEVER	DIG B	1/16	$3B_{12}$	15 01	$4T_{20}$-48	3U29-M	$5Z_{10}$-42
11007	XMTR A ON/OFF $-_{1}5V$	XMTA-15V	ANLG	1/16	A_{335}	15 05	$4T_{14}$-49	3U29-T	$5Z_{17}$-40
11008	XMTR B ON/OFF $-_{1}5V$	XMTR-15V	ANLG	1/16	A_{352}	15 14	$4T_{14}$-67	3U29-U	$5Z_{17}$-42
11009	RANGING MODE ON/OFF $-_{1}5V$	RNG -15V	ANLG	1/16	A_{353}	15 23	$4T_{14}$-68	3U29-N	$5Z_{17}$-19
11010	AUX OSCILLATOR BYPASS/ENABLE	AUX OSCI	DIG B	1/16	$3B_{24}$	02 02	$4T_{11}$-03	3U29-S	
11011	MODULATION INPUT NORMAL/CROSSED	MOD IN	DIG B	1/16	$3B_{25}$	08 02	$4T_{11}$-13	3U29-R	
11020	USB XPTR PRIMARY POWER OFF/ON	SEE ISM							
11021	USB XPTR REDUNDANT POWER OFF/ON	SEE ISM							
11022	USB XPTRS OFF SIG ENA/DIS	SEE PSM							
	PREMODULATION PROCESSOR (PMP)								
11101	POWER SUPPLY A VOLTAGE	PWR A V	ANLG	1/16	A_{475}	08 28	$4T_{07}$-07	$3U_{05}$-L	
11102	POWER SUPPLY B VOLTAGE	PWR B V	ANLG	1/16	A_{492}	08 37	$4T_{07}$-24	$3U_{05}$-M	
11103	TEMPERATURE A	TEMP A	ANLG	1/16	A_{392}	10 46	$4T_{03}$-33	$3U_{05}$-A	
11104	TEMPERATURE B	TEMP B	ANLG	1/16	A_{408}	10 55	$4T_{01}$-11	$3U_{05}$-B	
11105	DISCRIMINATOR A ON/OFF	DISCR A	DIG B	1/16	$3B_{26}$	15 02	$4T_{11}$-23	$3U_{05}$-H	
11106	DISCRIMINATOR B ON/OFF	DISCR B	DIG B	1/16	$3B_{29}$	18 02	$4T_{11}$-53	$3U_{05}$-J	
11107	MODULATOR A ON/OFF	MODLTR A	DIG B	1/16	$3B_{30}$	01 03	$4T_{17}$-10	$3U_{05}$-P	
11108	MODULATOR B ON/OFF	MODLTR B	DIG B	1/16	$3B_{20}$	02 03	4T24-71	$3U_{05}$-R	$5Z_{10}$-43
11109	NRTR 1/2	NRTR SLT	DIG B	1/16	$3B_{31}$	08 03	$4T_{17}$-21	$3U_{05}$-S	
11110	WBVTR 1/2	WBVTR SL	DIG B	1/16	$3B_{32}$	10 03	$4T_{17}$-31	$3U_{05}$-T	
11111	RECORDER IN NRTR/WBVTR	RCDR IN	DIG B	1/16	0B16	12 03	4T24-28	$3U_{05}$-U	$5Z_{10}$-44

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	WIDEBAND POWER AMPLIFIERS								
12000	WB PWR AMPS PRIMARY PWR OFF/ON	SEE ISM							
12100	WB PWR AMPS REDUNDANT PWR OFF/ON	SEE ISM							
	WIDEBAND POWER AMPLIFIER NO. 1								
12001	COLLECTOR TEMP 1	CLTR T 1	ANLG	1/16	A428	12 43	4T01-32	1W17-J	
12002	HELIX CURRENT 1	HELX I 1	ANLG	1/16	A445	15 52	4T01-49	1W17-D	
12003	CATHODE CURRENT 1	CATH I 1	ANLG	1/16	A462	18 61	4T01-67	1W17-C	
12004	FOWARD POWER 1	FWD PW 1	ANLG	1/16	A479	02 71	4T07-11	1W17-A	
12005	REFLECTED POWER 1	REL PW 1	ANLG	1/16	A496	18 76	4T07-28	1W17-B	
12006	HEATER STATUS 1 ON/OFF	HTR ST 1	DIG B	1/16	2B25	08 02	4T11-12	1W23-A	
12008	POWER MODE 1 HIGH/LOW	PWR MD 1	DIG B	1/16	2B15	12 02	4T24-20	1W23-J	5Z12-01
	WIDEBAND POWER AMPLIFIER NO. 2								
12101	COLLECTOR TEMP 2	CLTR T 2	ANLG	1/16	A497	10 43	4T07-29	1W29-J	
12102	HELIX CURRENT 2	HELX I 2	ANLG	1/16	A514	12 52	4T05-08	1W29-D	
12103	CATHODE CURRENT 2	CATH I 2	ANLG	1/16	A531	15 61	4T05-26	1W29-C	
12104	FOWARD POWER 2	FWD PW 2	ANLG	1/16	A548	01 71	4T05-43	1W29-A	
12105	REFLECTED POWER 2	REL PW 2	ANLG	1/16	A565	18 79	4T05-61	1W29-B	
12106	HEATER STATUS 2 ON/OFF	HTR ST 2	DIG B	1/16	2B29	18 02	4T11-52	1W35-A	
12108	POWER MODE 2 HI/LOW	PWR MD 2	DIG B	1/16	2B20	02 03	4T24-70	1W35-J	5Z12-02

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	WIDEBAND FREQUENCY MODULATOR								
12200	RBV FILTER A OUT/IN	RBV FL A	DIG B	1/16	9B25	08 02	4T11-19	1W46-10	5Z10-45
12201	RBV FILTER B OUT/IN	RBV FL B	DIG B	1/16	8B14	10 02	4T24-16	1W46-29	
12202	AUX. DATA TO RBV FILT. A YES/NO	AX TO RA	DIG B	1/16	9B02	02 00	4T16-21	1W46-01	
12203	AUX. DATA TO RBV FILT. B YES/NO	AX TO RB	DIG B	1/16	9B03	08 00	4T16-31	1W46-21	
12204	RT DATA TO RBV FILT. A YES/NO	RT TO RA	DIG B	1/16	1B04	10 00	4T16-33	1W46-02	
12205	RT DATA TO RBV FILT. B YES/NO	RT TO RB	DIG B	1/16	9B05	12 00	4T16-52	1W46-22	
12206	TAPE 1 DATA TO RBV FILT.A YES/NO	T1 TO RA	DIG B	1/16	9B06	15 00	4T16-63	1W46-03	
12207	TAPE 1 DATA TO RBV FILT.B YES/NO	T1 TO RB	DIG B	1/16	9B07	18 00	4T20-02	1W46-23	
12208	TAPE 2 DATA TO RBV FILT.A YES/NO	T2 TO RA	DIG B	1/16	9B08	01 01	4T20-13	1W46-04	
12209	TAPE 2 DATA TO RBV FILT.B YES/NO	T2 TO RB	DIG B	1/16	9B09	02 01	4T20-23	1W46-24	
12210	MSS FILTER A OUT/IN	MSS FL A	DIG B	1/16	9B15	12 02	4T24-27	1W46-30	
12211	MSS FILTER B OUT/IN	MSS FL B	DIG B	1/16	9B26	15 02	4T11-29	1W46-11	5Z10-46
12212	RT DATA* TO MSS FILT. A YES/NO	RT* M A	DIG B	1/16	5B22	08 01	4T09-22	1W46-25	5Z10-47
12213	RT DATA* TO MSS FILT. B YES/NO	RT* M B	DIG B	1/16	9B10	10 01	4T20-33	1W46-06	
12214	RT DATA ** TO MSS FILT. A YES/NO	RT** M A	DIG B	1/16	7B16	12 03	4T24-35	1W46-26	
12215	RT DATA ** TO MSS FILT. B YES/NO	RT** M B	DIG B	1/16	9B13	01 02	4T24-07	1W46-07	
12216	TAPE 1 DATA TO MSS FILT. A YES/NO	T1 TO MA	DIG B	1/16	9B11	12 01	4T20-43	1W46-27	
12217	TAPE 1 DATA TO MSS FILT. B YES/NO	T1 TO MB	DIG B	1/16	9B12	15 01	4T20-54	1W46-08	
12218	TAPE 2 DATA TO MSS FILT. A YES/NO	T2 TO MA	DIG B	1/16	9B23	18 01	4T09-36	1W46-28	5Z10-48
12219	TAPE 2 DATA TO MSS FILT. B YES/NO	T2 TO MB	DIG B	1/16	9B14	10 02	4T24-17	1W46-09	
12220	MODULATOR A, VCO A1/A2	MODA VCO	DIG B	1/16	9B20	02 03	4T09-06	1W46-05	5Z10-49
12221	MODULATOR B, VCO B1/B2	MODB VCO	DIG B	1/16	9B31	08 03	4T17-27	1W46-20	5Z10-50
12222	MODULATOR A, AFC OUT/IN	MODA AFC	DIG B	1/16	9B29	18 02	4T17-06	1W46-12	5Z10-51
12223	MODULATOR B, AFC OUT/IN	MODB AFC	DIG B	1/16	9B30	01 03	4T17-17	1W46-31	5Z10-52
12224	DATA OUTPUT A NORMAL/SUMMED	DATA A	DIG B	1/16	2B01	01 00	4T16-03	1W46-17	
12225	DATA OUTPUT B NORMAL/SUMMED	DATA B	DIG B	1/16	9B04	10 00	4T16-41	1W46-35	
12226	RBV BIAS A/B	RBV BIAS	DIG B	1/16	9B22	08 01	4T09-26	1W46-13	5Z10-53
12227	MODULATOR A, LOOP STRESS	MODA L S	ANG	1/16	A201	02 61	4T08-23	1W46-14	
12228	MODULATOR B, LOOP STRESS	MODB L S	ANG	1/16	A218	08 78	4T10-01	1W46-33	
12229	WBM TEMPERATURE	WBM TEMP	ANG	1/16	A269	18 42	4T10-55	1W46-15	
	WIDEBAND POWER SUPPLY								
12230	WBM INVERTER A OFF/ON	INVRTR A	DIG B	1/16	9B01	01 00	4T16-10	1W11-07	5Z12-3
12231	WBM INVERTER B OFF/ON	INVRTR B	DIG B	1/16	2B22	08 01	4T09-19	1W11-08	
12232	+15 REG. VOLTAGE A	+15V A	ANG	1/16	A377	15 10	4T03-18	1W05-13	
12233	+15 REG. VOLTAGE B	+15V B	ANG	1/16	A394	01 25	4T03-35	1W05-14	
12234	-15 REG. VOLTAGE A	-15V A	ANG	1/16	A411	18 24	4T01-14	1W05-03	
12235	-15 REG. VOLTAGE B	-15V B	ANG	1/16	A512	01 43	4T05-06	1W05-04	
12236	+5 REG. VOLTAGE A	+5V A	ANG	1/16	A513	01 52	4T05-07	1W05-11	
12237	+5 REG. VOLTAGE B	+5V B	ANG	1/16	A530	08 52	4T05-25	1W05-12	
12238	-5 REG. VOLTAGE A	-5V A	ANG	1/16	A547	18 19	4T05-42	1W05-05	
12239	-5 REG. VOLTAGE B	-5V B	ANG	1/16	A564	10 61	4T05-60	1W05-06	
12240	-24.5 MONITOR NO. 1 A/B	-24.5 M1	ANG	1/16	A454	15 24	4T01-50	1W05-01	
12241	-24.5 MONITOR NO. 2 A/B	-24.5 M2	ANG	1/16	A471	18 78	4T07-03	1W05-02	
12242	WBM INVERTER TEMP	INVRTR T	ANG	1/16	A488	10 78	4T07-20	1W11-03	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	WIDEBAND VIDEO TAPE RECORDER NO. 1								
13_{001}	MSS STANDBY 1 YES/NO	MSS SBY1	DIG R	1/1	4B28	17 02	4T11-44	5W16-*R	5Z12-4
13_{002}	RBV STANDBY 1 YES/NO	RBV SBY1	DIG R	1/1	4B17	16 03	4T24-42	5W16-*Q	
13_{003}	RECORD 1 YES/NO	WB RCD 1	DIG R	1/1	4B18	17 03	4T24-52	5W16-*H	
13_{004}	PLAYBACK 1 YES/NO	WB PBK 1	DIG R	1/1	4B19	16 04	4T24-62	5W16-*I	
13_{005}	FAST REWIND 1 YES/NO	REWIND 1	DIG R	1/16	2B32	10 03	4T17-30	5W16-*J	5Z12-5
	SEE FUNC. NO. 13_{037}								
13_{006}	FAST FWD 1 YES/NO	FOWARD 1	DIG R	1/16	2B16	12 03	4T24-30	5W16-*S	
	SEE FUNC. NO. 13_{038}								
13_{007}	EOT/BOT LOGIC DIS/ENA	EOT/BOT	DIG R	1/1	6B28	17 02	4T11-46	5W16-*E	5Z12-6
13_{008}	PRIMARY END OF TAPE 1 YES/NO	P EOT 1	DIG R	1/16	4B02	02 00	4T16-16	5W16-N	
13_{009}	SECONDARY END OF TAPE 1 YES/NO	S EOT 1	DIG R	1/16	4B03	08 00	4T16-26	5W16-M	
13_{010}	PRIMARY BEGIN OF TAPE 1 YES/NO	P BOT 1	DIG R	1/16	4B01	10 00	4T16-36	5W16-*F	
13_{011}	SECONDARY BEGIN OF TAPE 1 YES/NO	S BOT 1	DIG R	1/16	4B05	12 00	4T16-47	5W16-P	
13_{013}	LAP NO 1 YES/NO	LAP 1	DIG R	1/16	4B06	15 00	4T16-57	5W16-R	
13_{014}	MSS/RBV STATUS NO 1 MSS/RBV	STATUS 1	DIG R	1/16	4B07	18 00	4T16-68	5W16-*T	
13_{015}	CURRENT SET TO 4DB NO 1 IN/OUT	4DB SET1	DIG R	1/16	4B08	01 01	4T20-07	5W16-U	
13_{016}	CURRENT SET TO 2DB NO 1 IN/OUT	2DB SET1	DIG R	1/16	4B09	02 01	4T20-18	5W16-V	
13_{017}	CURRENT SET TO 1 DB NO 1 IN/OUT	1DB SET1	DIG R	1/16	4B22	08 01	4T09-21	5W16-W	5Z12-7
13_{018}	CONVERTER PRIMARY PWR 1 ON/OFF	CNV PWR1	DIG R	1/16	4B11	12 01	4T20-38	5W16-*D	
13_{019}	VOLTAGE PROTECT 1 ENABLE/DISABLE	VLT PRT1	DIG R	1/16	4B12	15 01	4T20-49	5W16-T	
13_{020}	PRIMARY VOLTAGE RANGE NO 1 IN/OUT	P V RNG1	DIG R	1/16	4B23	18 01	4T09-31	5W16-*P	5Z12-8
13_{021}	VOLTAGE PROTECT RELAY 1 OPER/CLOSED	V PR RY1	DIG R	1/16	4B13	01 02	4T24-02	5W16-S	
13_{022}	TU PRESSURE 1	TU PRS 1	ANOG	1/16	A011	18 03	4T02-12	5W16-*A	
13_{023}	TU TEMPERATURE 1	TU TEMP1	ANOG	1/16	A028	01 13	4T02-30	5W16-*B	
13_{024}	EU TEMPERATURE 1	EU TEMP1	ANOG	1/16	A045	08 22	4T02-47	5W16-C	
13_{025}	TAPE FOOTAGE 1	TAPE FT1	ANOG	1/1	A062	04 01	4T02-65	5W16-Z	FM00
13_{026}	CAPSTAN MOTOR SPEED 1	CPST MS1	ANOG	1/16	A079	10 40	4T04-10	5W16-B	
13_{027}	HWP MOTOR SPEED 1	HWP MS 1	ANOG	1/16	A096	15 49	4T04-27	5W16-G	
13_{028}	CAPSTAN MOTOR CURRENT 1	CPST MI1	ANOG	1/16	A097	18 58	4T04-28	5W16-J	
13_{029}	PLAYBACK VOLTAGE 1	P/B V 1	ANOG	1/16	A114	18 67	4T06-07	5W16-E	
13_{030}	HWP MOTOR CURRENT NO 1	HWP MI 1	ANOG	1/16	A131	12 79	4T06-25	5W16-H	
13_{031}	RECORDER INPUT CURRENT 1	R IN I 1	ANOG	1/1	A148	07 04	4T06-42	5W16-*C	
13_{032}	LIMITER VOLTAGE NO 1	LMTR V 1	ANOG	1/16	A165	01 04	4T06-60	5W16-D	
13_{033}	SERVO VOLTAGE NO 1	SERV V 1	ANOG	1/16	A182	02 13	4T08-04	5W16-F	
13_{034}	CONVERTER OUTPUT 5.6V 1	5.6 CNV1	ANOG	1/16	A199	15 51	4T08-21	5W16-K	
13_{035}	VTR 1 CONTROL NORM/REVERSED	SEE PSM							
13_{036}	VTR 1 PWR BYPASS OFF/ON	SEE PSM							
13_{037}	FAST REWIND 1 YES/NO	REWIND 1	DIG R	1/1	6B17	16 03	4T24-44	5W16-*J	
	SEE FUNC. NO. 13_{005}								
13_{038}	FAST FWD 1 YES/NO	FOWARD 1	DIG R	1/1	9B19	16 04	4T24-67	5W16-*S	
	SEE FUNC. NO. 13_{006}								

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	WIDEBAND VIDEO TAPE RECORDER NO. 2								
13_{101}	MSS STANDBY 2 YES/NO	MSS SBY2	DIG B	1/1	6B19	16 0^4	4T24-64	$5W4_0$-*R	
13_{102}	RBV STANDBY 2 YES/NO	RBV SBY2	DIG B	1/1	8B17	16 0^3	4T24-46	$5W4_0$-*Q	
13_{103}	RECORD 2 YES/NO	WB RCD 2	DIG B	1/1	8B18	17 0^3	4T24-56	$5W4_0$-*H	
13_{104}	PLAYBACK 2 YES/NO	WB PBK 2	DIG B	1/1	8B19	16 0^4	4T24-66	$5W4_0$-*I	
13_{105}	FAST REWIND 2 YES/NO	REWIND 2	DIG B	1/16	4B24	0^2 0^2	$4T11-0^4$	$5W4_0$-*J	$5Z12-9$
	SEE FUNC. NO. 13_{137}								
13_{106}	FAST FOWARD 2 YES/NO	FOWARD 2	DIG B	1/16	4B25	0^8 0^2	4T11-14	$5W4_0$-*S	$5Z12-10$
	SEE FUNC. NO. 13_{138}								
13_{107}	EOT/BOT LOGIC DIS/ENA	EOT/BOT	DIG B	1/1	9B28	17 0^2	4T11-49	$5W4_0$-*E	$5Z12-11$
13_{108}	PRIMARY END OF TAPE 2 YES/NO	P EOT 2	DIG B	1/16	4B14	10 0^2	4T24-12	$5W4_0$-N	
13_{109}	SECONDARY END OF TAPE 2 YES/NO	S EOT 2	DIG B	1/16	4B15	12 0^2	4T24-22	$5W4_0$-M	
13_{110}	PRIMARY BEGIN OF TAPE 2 YES/NO	P BOT 2	DIG B	1/16	4B26	15 0^2	4T11-24	$5W4_0$-*F	$5Z12-12$
13_{111}	SECONDARY BEGIN OF TAPE 2 YES/NO	S BOT 2	DIG B	1/16	4B29	18 0^2	$4T17-0^1$	$5W4_0$-P	$5Z12-13$
13_{113}	LAP NO 2 YES/NO	LAP 2	DIG B	1/16	$4B3_0$	0^1 0^3	4T17-11	$5W4_0$-R	$5Z12-14$
13_{114}	MSS/RBV STATUS 2 MSS/RVB	STATUS 2	DIG B	1/16	$4B2_0$	0^2 0^3	4T24-72	$5W4_0$-*T	
13_{115}	CURRENT SET 4 DB 2 IN/OUT	4DB SET2	DIG B	1/16	4B31	0^8 0^3	4T17-22	$5W4_0$-U	$5Z12-15$
13_{116}	CURRENT SET 2 DB 2 IN/OUT	2DB SET2	DIG B	1/16	4B32	10 0^3	4T17-33	$5W4_0$-V	$5Z12-16$
13_{117}	CURRENT SET 1 DB 2 IN/OUT	1DB SET2	DIG B	1/16	4B16	12 0^3	4T24-32	$5W4_0$-W	
13_{118}	CONVERTER PRIMARY PWR 2 ON/OFF	CNV PWR2	DIG B	1/16	6B01	0^1 0^0	$4T16-0^7$	$5W4_0$-*D	
13_{119}	VOLTAGE PROTECT 2 EN/DIS	VLT PRT2	DIG B	1/16	$6B_02$	0^2 0^0	4T16-18	$5W4_0$-T	
13_{120}	PRIMARY VOLT. RANGE NO 2 IN/OUT	P V RNG2	DIG B	1/16	$6B_03$	0^8 0^0	4T16-28	$5W4_0$-*P	
13_{121}	VOLTAGE PROTECT RELAY 2 OPEN/CLOSED	V PR RY2	DIG B	1/16	$6B_04$	10 0^0	4T16-38	$5W4_0$-S	
13_{122}	TU PRESSURE 2	TU PRS 2	ANOG	1/16	A169	10 22	$4T_06-64$	$5W4_0$-*A	
13_{123}	TU TEMPERATURE 2	TU TEMP2	ANOG	1/16	A186	12 31	$4T_08-0^8$	$5W4_0$-*B	
13_{124}	EU TEMPERATURE	EU TEMP2	ANOG	1/16	$A2_03$	12 4_0	$4T_08-25$	$5W4_0$-C	
13_{125}	TAPE FOOTAGE 2	TAPE FT2	ANOG	1/1	$A22_0$	0^7 0^1	$4T10-0^4$	$5W4_0$-Z	FM00
13_{126}	CAPSTAN MOTOR SPEED 2	CPST MS2	ANOG	1/16	A237	0^1 59	$4T_10-22$	$5W4_0$-B	
13_{127}	HWP MOTOR SPEED 2	HWP MS 2	ANOG	1/16	A254	0^1 68	$4T_10-39$	$5W4_0$-G	
13_{128}	CAPSTAN MOTOR CURRENT 2	CPST MI2	ANOG	1/16	A271	10 79	$4T_10-57$	$5W4_0$-J	
13_{129}	PLAYBACK VOLTAGE 2	P/B V 2	ANOG	1/16	A288	0^2 0^4	$4T_10-74$	$5W4_0$-E	
13_{130}	HWP MOTOR CURRENT 2	HWP MI2	ANOG	1/16	A289	0^8 1^3	$4T14-0^2$	$5W4_0$-H	
13_{131}	RECORDER INPUT CURRENT 2	R IN I 2	ANOG	1/1	$A3_06$	0^9 0^4	4T14-19	$5W4_0$-*C	
13_{132}	LIMITER VOLTAGE 2	LMTR V 2	ANOG	1/16	A323	12 22	4T14-37	$5W4_0$-D	
13_{133}	SERVO VOLTAGE 2	SERV V 2	ANOG	1/16	$A34_0$	18 31	4T14-55	$5W4_0$-F	
13_{134}	CONVERTER OUTPUT 5.6V NO 2	5.6_{CNV2}	ANOG	1/16	A357	15 6_0	4T14-72	$5W4_0$-K	
13_{135}	VTR 2 CONTROL NORM/REVERSED	SEE PSM							
13_{136}	VTR 2 PWR BYPASS OFF/ON	SEE PSM							
13_{137}	FAST REWIND 2 YES/NO	REWIND2	DIG B	1/1	6B19	17 0^3	4T24-54	$5W4_0$-*J	
	SEE FUNC. NO. 13_{105}								
13_{138}	FAST FWD 2 YES/NO	FOWARD2	DIG B	1/1	9B17	16 0^3	4T24-47	$5W4_0$-*S	
	SEE FUNC. NO. 13_{106}								

$14000,15000,16000$ - PAYLOAD SUBSYSTEM

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	RBV CAMERA CONTROLLER								
14_{000}	REPHASE SIGNAL SOURCE (VTR1/VTR2)	REPHASE	ANLG	1/16	$A_{01}4$	18 4_0	$4T_02-15$	$3R_14-04$	
14_{001}	CCC BOARD TEMPERATURE	CCC BD T	ANLG	1/16	A_031	01 5_0	$4T_02-33$	$3R_14-15$	
14_{002}	CCC POWER SUPPLY TEMPERATURE	CCC PS T	ANLG	1/16	A_504	02 59	$4T_07-36$	$3R_03-01$	
14_{003}	+/- 15 VOLT SUPPLY	15V SPLY	ANLG	1/16	A555	02 68	$4T_05-5_0$	$3R_03-03$	
14_{004}	+6, -5.25 VOLT SUPPLY	+6-5.25V	ANLG	1/16	A572	08 79	$4T_05-68$	$3R_03-04$	
14_{005}	APERTURE CORRECTOR OUT/IN	APT CORR	DIG B	1/16	$6B_05$	12 00	$4T_16-49$	$3R_14-03$	
14_{006}	CYCLE CONT/SING	CYCLE	DIG B	1/16	$6B_06$	15 00	$4T_16-59$	$3R_14-07$	
14_{007}	EXPOSURE C ON/OFF	EXPOSR C	DIG B	1/16	2B26	15 02	$4T_11-22$	$3R_14-05$	$5Z_10-54$
14_{008}	EXPOSURE A ON/OFF	EXPOSR A	DIG B	1/16	$6B_08$	01 01	$4T_20-09$	$3R_14-09$	
14_{009}	EXPOSURE B ON/OFF	EXPOSR B	DIG B	1/16	$6B_09$	02 01	$4T_20-2_0$	$3R_14-10$	
14_{010}	1.6 MEZ CLOCK ON/OFF	1.6MHZ	DIG B	1/16	6B22	08 01	$4T_09-23$	$3R_14-11$	$5Z_10-55$
14_{011}	HORIZONTAL SYNC ON/OFF	HOR SYNC	DIG B	1/16	6B10	10 01	$4T_20-3_0$	$3R_14-12$	
14_{012}	VERTICAL SYNC ON/OFF	VER SYNC	DIG B	1/16	6B11	12 01	$4T_20-4_0$	$3R_14-13$	
14_{013}	1HZ SYNC ON/OFF	1HZ SYNC	DIG B	1/16	6B23	18 01	$4T_09-33$	$3R_14-14$	$5Z_10-56$
14_{014}	-24.5 VOLT INPUT ON/OFF	-24V IN	DIG B	1/16	6B13	01 02	$4T_24-04$	$3R_03-02$	$5Z_10-57$
14_{015}	CCC POWER ON/OFF	CCC PWR	DIG B	1/16	6B24	02 02	$4T_11-06$	$3R_03-05$	
14_{016}	CATHODE REACTIVATION ON/OFF	CTH REAC	DIG B	1/16	6B25	08 02	$4T_11-16$	$3R_14-08$	$5Z_10-58$
14_{017}	RBV SHUTTER PWR ON/OFF	SEE PSM							
14_{018}	RBV PRIMARY CONTROL ENA/DIS	SEE PSM							
	RBV CAMERA NO. 1								
14_{100}	VIDEO OUTPUT 1	VID OUT1	ANLG	1/16	A_048	08 0^4	$4T_02-5_0$	$2R_06-01$	
14_{101}	FOCUS CURRENT 1	FOC I 1	ANLG	1/16	A_049	10 1^3	$4T_02-5_1$	$2R_06-02$	
14_{102}	COMBINED ALIGNMENT CURRENT 1	ALGN I 1	ANLG	1/16	A_066	18 22	$4T_02-69$	$2R_06-04$	
14_{103}	TEMPERATURE ELECTRONICS 1	ELEC T 1	ANLG	1/16	A_083	01 32	$4T_04-1^4$	$2R_06-05$	
14_{104}	TEMPERATURE LOW-VOLTAGE PWR SUPPLY 1	LVPS T 1	ANLG	1/16	A100	01 41	$4T_04-3_1$	$2R_06-07$	
14_{105}	DEFLECTION POWER SUPPLY 1	DFL PS 1	ANLG	1/16	A117	02 5_0	$4T_06-1_0$	$2R_06-12$	
14_{106}	LOW VOLTAGE POWER SUPPLY 1	LV PWS 1	ANLG	1/16	A_134	08 59	$4T_06-28$	$2R_06-10$	
14_{107}	THERMOELECTRIC UNIT CURRENT 1	THMO I 1	ANLG	1/16	A_151	08 68	$4T_06-45$	$2R_06-03$	
14_{108}	VIDICON FILAMENT CURRENT 1	VFIL I 1	ANLG	1/16	A367	02 79	$4T_03-08$	$5R_08-02$	$5Z_08-01$
14_{109}	G1 VOLTAGE 1	G1 VLT 1	ANLG	1/16	A374	10 0^4	$4T_03-15$	$5R_08-03$	$5Z_08-02$
14_{110}	TARGET VOLTAGE 1	TGT V 1	ANLG	1/16	A426	12 13	$4T_01-3_0$	$5R_08-11$	$5Z_08-03$
14_{111}	VIDICON CATHODE CURRENT 1	VCTH I 1	ANLG	1/16	A477	01 23	$4T_07-09$	$5R_08-01$	$5Z_08-04$
14_{112}	HORIZONTAL DEFLECTION OUTPUT 1	HOR DEF1	ANLG	1/16	A487	02 32	$4T_07-19$	$5R_08-04$	$5Z_08-05$
14_{113}	VERTICAL DEFLECTION OUTPUT 1	VER DEF1	ANLG	1/16	A527	02 41	$4T_05-22$	$5R_08-05$	$5Z_08-06$
14_{114}	TEMPERATURE FACEPLATE 1	FPLT T 1	ANLG	1/16	A544	08 5_0	$4T_05-39$	$5R_08-14$	$5Z_08-07$
14_{115}	TEMPERATURE YOKE/FOCUS COIL 1	Y/FC T 1	ANLG	1/16	A545	10 59	$4T_05-4_0$	$5R_08-06$	$5Z_08-08$
14_{116}	-24.5V POWER IN, NO. 1 ON/OFF	-24 IN 1	DIG B	1/16	6B15	12 02	$4T_24-24$	$2R_06-06$	
14_{117}	-28 VOLT SHUTTER CURRENT 1 ON/OFF	SHTR I 1	DIG B	5/1	1B21	14 00	$4T_09-08$	$2R_06-13$	$5Z_10-59$
14_{118}	CAMERA NO. 1 ON/OFF	SEE ISM							
14_{119}	HIGH VOLTAGE CHOPPER ON/OFF	HVCHPR1	DIG B	1/16	9B24	02 02	$4T_11-09$	$5R_08-09$	$5Z_08-9$
14_{120}	500 VOLTS 1 ON/OFF	500V 1	ANLG	1/16	A562	15 22	$4T_05-5_8$	$5R_08-08$	$5Z_08-10$
14_{121}	RBV 1 THERMOELECTRIC MOD ENA/DIS	SEE PSM							

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	RBV CAMERA NO. 2								
142$_{00}$	VIDEO OUTPUT 2	VID OUT2	ANOG	1/16	A253	10 68	4T10-38	3R24-01	
142$_{01}$	FOCUS CURRENT 2	FIC I 2	ANOG	1/16	A27$_{0}$	01 79	4T10-56	3R24-02	
142$_{02}$	COMBINED ALIGNMENT CURRENT 2	ALGN I 2	ANOG	1/16	A287	12 04	4T10-73	3R24-04	
142$_{03}$	TEMPERATURE,ELECTRONICS 2	ELEC T 2	ANOG	1/16	A30$_{4}$	18 13	4T14-17	3R24-05	
142$_{04}$	TEMPERATURE, LOW VOLTAGE PWR SUP 2	LVSP T 2	ANOG	1/16	A30$_{5}$	08 23	4T14-18	3R24-07	
142$_{05}$	DEFLECTION POWER SUPPLY NO 2	DFL PS 2	ANOG	1/16	A322	12 32	4T14-36	3R24-12	
142$_{06}$	LOW VOLTAGE POWER SUPPLY 2	LV PWS 2	ANOG	1/16	A339	08 41	4T14-54	3R24-10	
142$_{07}$	THERMOELECTRIC UNIT CURRENT 2	THMO I 2	ANOG	1/16	A356	10 50	4T14-71	3R24-03	
142$_{08}$	VIDICON FILMENT CURRENT 2	VFIL I 2	ANOG	1/16	A384	12 59	4T03-25	5R18-02	5Z08-24
142$_{09}$	G1 VOLTAGE 2	G1 VLT 2	ANOG	1/16	A385	12 68	4T03-26	5R18-03	5Z08-25
14210	TARGET VOLTAGE NO 2	TGT V 2	ANOG	1/16	A40$_{2}$	01 77	4T01-05	5R18-11	5Z08-26
14211	VIDICON CATHODE CURRENT NO 2	VCTH I 2	ANOG	1/16	A419	18 04	4T01-23	5R18-01	5Z08-27
14212	HORIZONTAL DEFLECTION OUTPUT 2	HOR DEF2	ANOG	1/16	A436	01 14	4T01-40	5R18-04	5Z08-28
14213	VERTICAL DEFLECTION OUTPUT 2	VER DEF2	ANOG	1/16	A453	10 23	4T01-58	5R18-05	5Z08-29
14214	TEMPERATURE, FACEPLATE 2	FPLT T 2	ANOG	1/16	A47$_{0}$	18 32	4T07-01	5R18-14	5Z08-30
14215	TEMPERATURE, YOKE/FOCUS COIL 2	Y/FC T 2	ANOG	1/16	A521	12 41	4T05-15	5R18-06	5Z08-31
14216	-24.5V POWER IN, NO.2 ON/OFF	-24 IN 2	DIG B	1/16	682$_{0}$	02 03	4T09-02	3R24-06	5Z10-60
14217	-28 VOLT SHUTTER CURRENT 2 ON/OFF	SHTR I 2	DIG B	5/1	4821	14 00	4T09-11	3R24-13	5Z10-61
14218	CAMERA NO. 2 ON/OFF	SEE ISM							
14219	HIGH VOLTAGE CHOPPER ON/OFF	HV CHPR2	DIG B	1/16	1832	10 03	4T17-29	5R18-09	5Z08-32
1422$_{0}$	500 VOLTS 2 ON/OFF	500V 2	ANOG	1/16	A538	15 31	4T05-33	5R18-08	5Z08-33
14221	RBV 2 THERMOELECTRIC MOD ENA/DIS	SEE PSM							

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	MULTISPECTRAL SCANNER (MSS)								
15_{000}	MSS POWER ENABLE/DISABLE	SEE PSM							
15_{001}	MSS SYSTEM A ON/OFF	SEE ISM							
15_{002}	MSS SYSTEM B ON/OFF	SEE ISM							
15_{003}	BAND 1 HIGH VOLTAGE A/B	HV1 SLCT	DIG B	1/16	$8B_06$	15 00	$4T_16$-62	$5M_07$-03	$5Z_12$-17
15_{004}	BAND 2 HIGH VOLTAGE A/B	HV2 SLCT	DIG B	1/16	$8B_07$	18 00	$4T_20$-01	$5M_07$-04	$5Z_12$-18
15_{005}	BAND 3 HIGH VOLTAGE A/B	HV3 SLCT	DIG B	1/16	$8B_08$	01 01	$4T_20$-11	$5M_07$-05	$5Z_12$-19
15_{006}	HIGH VOLTAGE ON/OFF	HI VOLT	DIG B	1/16	$8B_09$	02 01	$4T_20$-22	$5M_07$-06	$5Z_12$-20
15_{007}	BAND 1 HIGH VOLTAGE ON/OFF	BND 1 HV	DIG B	1/16	8B22	08 01	$4T_09$-25	$5M_07$-07	
15_{008}	BAND 2 HIGH VOLTAGE ON/OFF	BND 2 HV	DIG B	1/16	8B10	10 01	$4T_20$-32	$5M_07$-08	$5Z_12$-21
15_{009}	BAND 3 HIGH VOLTAGE ON/OFF	BND 3 HV	DIG B	1/16	8B11	12 01	$4T_20$-42	$5M_07$-09	$5Z_12$-22
15_{010}	BAND 1 LOW VOLTAGE ON/OFF	BND 1 LV	DIG B	1/16	8B12	15 01	$4T_20$-53	$5M_07$-10	$5Z_12$-23
15_{011}	BAND 2 LOW VOLTAGE ON/OFF	BND 2 LV	DIG B	1/16	8B23	18 01	$4T_09$-35	$5M_07$-11	
15_{012}	BAND 3 LOW VOLTAGE ON/OFF	BND 3 LV	DIG B	1/16	8B24	02 02	$4T_11$-08	$5M_07$-12	
15_{013}	BAND 4 LOW VOLTAGE ON/OFF	BND 4 LV	DIG B	1/16	8B25	08 02	$4T_11$-18	$5M_07$-13	
15_{014}	BAND 5 LOW VOLTAGE ON/OFF	BND 5 LV	DIG B	1/16	6B26	15 02	$4T_11$-26	$5M_07$-14	
15_{015}	CALIBRATION LAMP A/B	CLMP SLT	DIG B	1/16	$8B_15$	12 02	$4T_24$-26	$5M_07$-15	$5Z_12$-24
15_{016}	CALIBRATION LAMP ON/OFF	CAL LAMP	DIG B	1/16	8B26	15 02	$4T_11$-28	$5M_07$-20	
15_{017}	SCAN MONITOR ON/OFF	SCAN MON	DIG B	1/16	8B29	18 02	$4T_17$-05	$5M_07$-17	
15_{018}	BAND 1 GAIN HIGH/LOW	BND 1 GN	DIG B	1/16	$8B_30$	01 03	$4T_17$-16	$5M_07$-18	
15_{019}	BAND 2 GAIN HIGH/LOW	BND 2 GN	DIG B	1/16	$8B_20$	02 03	$4T_09$-05	$5M_07$-19	
15_{020}	ROTATING SHUTTER ON/OFF	ROT SHTR	DIG B	1/16	8B31	08 03	$4T_17$-26	$5M_07$-16	
15_{021}	BAND 5 +/- 15VDC REGULATOR	BND5 15V	ANLG	1/16	A417	12 50	$4T_01$-21	$5M_11$-18	
15_{022}	BAND 5 PREAMP CASE TEMPERATURE	5PA CST	ANLG	1/16	$A5_03$	18 59	$4T_07$-35	$5M_11$-30	
15_{023}	SHUTTER MONITOR SOURCE A/B	SHTR MON	DIG B	1/16	8B32	10 03	$4T_17$-37	$5M_07$-21	
15_{025}	CHANNEL 25 BIAS	CH25 BIA	ANLG	1/16	A464	18 68	$4T_01$-69	$5M_11$-35	
15_{026}	CHANNEL 26 BIAS	CH26 BIA	ANLG	1/16	A465	02 77	$4T_01$-70	$5M_11$-36	
15_{027}	MUX ON/OFF	MULTPLXR	DIG B	1/16	$5B_06$	15 00	$4T_16$-58	$4M_02$-08	
15_{028}	MUX NORM/INHIBIT	MUX STAT	DIG B	1/16	$5B_07$	18 00	$4T_16$-69	$5M_07$-36	$5Z_12$-25
15_{029}	MUX MODE STATUS COMPRES/LINEAR	MUX MODE	DIG B	1/16	$5B_03$	08 00	$4T_16$-27	$4M_02$-09	
15_{030}	MID SCAN CODE OFF/ON	MID SCAN	DIG B	1/16	7B29	18 02	$4T_17$-04	$4M_02$-11	$5Z_12$-26
15_{031}	SCAN MONITOR SOURCE A/B	SCN SRCE	DIG B	1/16	$5B_04$	10 00	$4T_16$-37	$5M_07$-30	$5Z_12$-27
15_{032}	MSS MAG COMP ON/OFF	SEE ISM							
15_{033}	SCAN MIRROR ON/OFF	SCN MIRR	DIG B	1/16	$5B_02$	02 00	$4T_16$-17	$5M_07$-24	$5Z_12$-28
15_{034}	SCAN MIRROR POWER LINE 1 YES/NO	SCNM PL1	DIG B	1/16	7B31	08 03	$4T_17$-25	$5M_07$-28	
15_{035}	SCAN MIRROR POWER LINE 2 YES/NO	SCNM PL2	DIG B	1/16	$7B_20$	02 03	$4T_09$-04	$5M_07$-29	
15_{036}	SCAN MIRROR MODE NORMAL/INHIBIT	SCNM MDE	DIG B	1/16	$5B_08$	01 01	$4T_20$-08	$5M_07$-34	$5Z_12$-29
15_{037}	SCAN MIRROR PWR YES/NO	SCNM PWR	DIG B	1/16	$5B_09$	02 01	$4T_20$-19	$5M_07$-35	$5Z_12$-30
15_{038}	MSS HEATER ON/OFF	SEE PSM							
15_{040}	MUX -6V G.P. POWER SUPPLY	MUX -6V	ANLG	1/16	A185	02 33	$4T_08$-07	$4M_02$-01	
15_{041}	A/D CONVERTER REF SUPPLY	A/D SPLY	ANLG	1/16	A133	18 41	$4T_06$-27	$4M_02$-03	
15_{042}	AVERAGE DENSITY OF DATA TRANSITIONS	AVG DENS	ANLG	1/16	A219	01 51	$4T_10$-02	$4M_02$-04	
15_{043}	FIBER OPTICS PLATE 1 TEMPERATURE	FOPT 1 T	ANLG	1/16	A401	02 60	$4T_01$-04	$5M_11$-04	
15_{044}	FIBER OPTICS PLATE 2 TEMPERATURE	FOPT 2 T	ANLG	1/16	A418	02 69	$4T_01$-22	$5M_11$-05	
15_{045}	MUX TEMPERATURE	MUX TEMP	ANLG	1/16	A236	10 77	$4T_10$-21	$4M_02$-05	
15_{046}	ELECTRONICS COVER TEMPERATURE	EL CVR T	ANLG	1/16	A536	08 05	$4T_05$-31	$5M_11$-06	
15_{047}	POWER SUPPLIES TEMPERATURE	P SPLY T	ANLG	1/16	A552	10 14	$4T_05$-47	$5M_11$-07	
15_{048}	SCAN MIRROR REGULATOR TEMP	SM REG T	ANLG	1/16	A435	01 24	$4T_01$-39	$5M_11$-08	
15_{049}	SCAN MIRROR DRIVE ELECTRONICS TEMP	SMDR E T	ANLG	1/16	A452	08 33	$4T_01$-57	$5M_11$-09	
15_{050}	SCAN MIRROR DRIVE COIL TEMP	SMDR C T	ANLG	1/16	A568	02 42	$4T_05$-64	$5M_11$-10	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
15$_{0}$51	SCAN MIRROR TEMPERATURE	SCN MR T	ANLG	1/16	A469	02 51	4T$_{01}$-74	5M$_{11}$-11	
15$_{0}$52	ROTATING SHUTTER HOUSING TEMP	RSH HG T	ANLG	1/16	A486	15 77	4T$_{07}$-18	5M$_{11}$-31	
15$_{0}$53	SCAN MIRROR REGULATED VOLTAGE	SM REG V	ANLG	1/16	A362	08 69	4T$_{03}$-03	5M$_{11}$-34	
15$_{0}$54	CALIBRATION LAMP CURRENT	CALAMP I	ANLG	1/16	A533	12 77	4T$_{05}$-28	5M$_{11}$-13	
15$_{0}$55	BAND 1 +/-15 VDC REGULATOR	BND1 15V	ANLG	1/16	A485	10 05	4T$_{07}$-17	5M$_{11}$-14	
15$_{0}$56	BAND 2 +/-15 VDC REGULATOR	BND2 15V	ANLG	1/16	A365	12 14	4T$_{03}$-06	5M$_{11}$-15	
15$_{0}$57	BAND 3 +/-15VDC REGULATOR	BND3 15V	ANLG	1/16	A434	02 24	4T$_{01}$-38	5M$_{11}$-16	
15$_{0}$58	BAND 4 +/-15VDC REGULATOR	BND4 15V	ANLG	1/16	A416	10 33	4T$_{01}$-19	5M$_{11}$-17	
15$_{0}$59	-15 TLM REGULATED VOLTAGE	TLM 015V	ANLG	1/16	A379	08 42	4T$_{03}$-20	5M$_{11}$-12	
15$_{0}$60	+12 VDC -6VDC REGULATOR	+12-6VDC	ANLG	1/16	A396	08 51	4T$_{03}$-37	5M$_{11}$-19	
15$_{0}$61	+5 VDC LOGIC REGULATOR	LOGIC+5V	ANLG	1/16	A413	10 60	4T$_{01}$-16	5M$_{11}$-20	
15$_{0}$62	+19 VDC RECTIFIER OUTPIT	RECT+19V	ANLG	1/16	A430	10 69	4T$_{01}$-34	5M$_{11}$-21	
15$_{0}$63	-19 VDC RECTIFIER OUTPUT	RECT-19V	ANLG	1/16	A477	18 77	4T$_{01}$-51	5M$_{11}$-22	
15$_{0}$64	HIGH VOLTAGE MONITOR BAND 1 (A)	BND1 HVA	ANLG	1/16	A502	12 05	4T$_{07}$-34	5M$_{11}$-23	
15$_{0}$65	HIGH VOLTAGE MONITOR BAND 1 (B)	BND1 HVB	ANLG	1/16	A519	18 14	4T$_{05}$-13	5M$_{11}$-24	
15$_{0}$66	HIGH VOLTAGE MONITOR BAND 2 (A)	BND2 HVA	ANLG	1/16	A382	08 24	4T$_{03}$-23	5M$_{11}$-25	
15$_{0}$67	HIGH VOLTAGE MONITOR BAND 2 (B)	BND2 HVB	ANLG	1/16	A399	12 33	4T$_{01}$-01	5M$_{11}$-26	
15$_{0}$68	HIGH VOLTAGE MONITOR BAND 3 (A)	BND3 HVA	ANLG	1/16	A451	10 42	4T$_{01}$-56	5M$_{11}$-27	
15$_{0}$69	HIGH VOLTAGE MONITOR BAND 3 (B)	BND3 HVB	ANLG	1/16	A468	10 51	4T$_{01}$-73	5M$_{11}$-28	
15$_{0}$70	SHUTTER MOTOR CONTROL INTEGRATOR OUTPUT	SHTR MCI	ANLG	1/16	A550	12 60	4T$_{05}$-45	5M$_{11}$-29	
15$_{0}$71	SCAN MIRROR DRIVE CLOCK	SMDR CLK	ANLG	1/16	A567	12 69	4T$_{05}$-63	5M$_{11}$-37	
15$_{0}$72	BAND 5A GAIN BIT 1 1/0	5A GN B1	DIG B	1/16	1B14	10 02	4T24-09	5M$_{07}$-23	5Z$_{12}$-31
15$_{0}$73	BAND 5A GAIN BIT 2 1/0	5A GN B2	DIG B	1/16	2B14	10 02	4T24-10	5M$_{07}$-25	5Z$_{12}$-32
15$_{0}$74	BAND 5A GAIN BIT 3 1/0	5A GN B3	DIG B	1/16	3B14	10 02	4T24-11	5M$_{07}$-26	5Z$_{12}$-33
15$_{0}$75	BAND 5B GAIN BIT 1 1/0	5B GN B1	DIG B	1/16	2B30	01 03	4T17-09	5M$_{07}$-40	
15$_{0}$76	BAND 5B GAIN BIT 2 1/0	5B GN B2	DIG B	1/16	6B30	01 03	4T17-13	5M$_{07}$-41	
15$_{0}$77	BAND 5B GAIN BIT 3 1/0	5B GN B3	DIG B	1/16	7B30	01 03	4T17-15	5M$_{07}$-42	
15$_{0}$80	RADIATION COOLER FIRST STAGE TEMP.	RC 1ST	ANLG	1/16	A482	01 05	4T07-14	5M$_{11}$-01	
15$_{0}$81	RADIATION COOLER SECOND STAGE TEMP. (WIDE RANGE)	RC 2SW T	ANLG	1/16	A499	02 14	4T07-31	5M$_{11}$-02	
15$_{0}$82	RADIATION COOLER SECOND STAGE TEMP. (NARROW RANGE)	RC 2SN T	ANLG	1/16	A563	12 19	4T05-59	5M$_{11}$-03	
15$_{0}$83	DOOR MOTOR POWER ON/OFF	DR MTR P	DIG B	1/16	3B13	01 02	4T24-01	5M$_{07}$-22	5Z$_{12}$-34
15$_{0}$84	DOOR DIRECTION OPEN/CLOSE	DR DIR	DIG B	1/16	0B12	15 01	4T20-45	5M$_{07}$-38	5Z$_{12}$-35
15$_{0}$85	DOOR MOVING YES/NO	DR MVNG	DIG B	1/1	8B28	17 02	4T11-48	5M$_{07}$-44	
15$_{0}$86	DOOR HOLD ON/OFF	DR HOLD	DIG B	1/16	1B20	02 03	4T24-69	5M$_{07}$-43	5Z$_{12}$-36
15$_{0}$87	DOOR CLOSED YES/NO	DR CLSD	DIG B	1/16	8B02	02 00	4T16-20	5M$_{07}$-47	5Z$_{12}$-37
15$_{0}$88	DOOR OUTGAS YES/NO	DR OTGS	DIG B	1/16	2B03	08 00	4T16-24	5M$_{07}$-48	5Z$_{12}$-38
15$_{0}$89	DOOR OPEN YES/NO	DR OPEN	DIG B	1/16	2B05	12 00	4T16-45	5M$_{07}$-49	5Z$_{12}$-39
15$_{0}$90	DOOR OVERRIDE RESET/ACTUATE	DR OVRD	DIG B	1/16	7B26	15 02	4T11-27	5M$_{07}$-45	
15$_{0}$91	DOOR OVERRIDE SAFE/ARM	DR OVRD	DIG B	1/16	6B32	10 03	4T17-35	5M$_{07}$-46	
15$_{0}$92	OUTGAS HEATER ON/OFF	OTGS HTR	DIG B	1/16	3B16	12 03	4T24-31	5M$_{07}$-50	5Z$_{12}$-40
15$_{0}$93	RADIATION COOLER POWER ON/OFF	RC POWER	DIG B	1/16	4B10	10 01	4T20-28	5M$_{07}$-37	5Z$_{12}$-41

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
15_{101}	CHN 1 SCANNER VIDEO OUTPUT	CH1 SVO	ANOG	1/16	A363	18 0^5	$4T_{03}$-04	$5M_{15}$-01	
15_{102}	CHN 2 SCANNER VIDEO OUTPUT	CH2 SVO	ANOG	1/16	$A38_0$	01 0^6	$4T_{03}$-21	$5M_{15}$-02	
15_{103}	CHN 3 SCANNER VIDEO OUTPUT	CH3 SVO	ANOG	1/16	A397	02 0^6	$4T_{03}$-38	$5M_{15}$-03	
15_{104}	CHN 4 SCANNER VIDEO OUTPUT	CH4 SVO	ANOG	1/16	$A41_4$	08 0^6	$4T_{01}$-17	$5M_{15}$-04	
15_{105}	CHN 5 SCANNER VIDEO OUTPUT	CH5 SVO	ANOG	1/16	$A43_1$	10 0^6	$4T_{01}$-35	$5M_{15}$-05	
15_{106}	CHN 6 SCANNER VIDEO OUTPUT	CH6 SVO	ANOG	1/16	A448	12 0^6	$4T_{01}$-52	$5M_{15}$-06	
15_{107}	CHN 7 SCANNER VIDEO OUTPUT	CH7 SVO	ANOG	1/16	A449	01 15	$4T_{01}$-53	$5M_{15}$-08	
15_{108}	CHN 8 SCANNER VIDEO OUTPUT	CH8 SVO	ANOG	1/16	A466	02 15	$4T_{01}$-71	$5M_{15}$-09	
15_{109}	CHN 9 SCANNER VIDEO OUTPUT	CH9 SVO	ANOG	1/16	A483	08 15	$4T_{07}$-15	$5M_{15}$-10	
15_{110}	CHN 10_0 SCANNER VIDEO OUTPUT	CH10 SVO	ANOG	1/16	$A5_{00}$	10 15	$4T_{07}$-32	$5M_{15}$-11	
15_{111}	CHN 11_1 SCANNER VIDEO OUTPUT	CH11 SVO	ANOG	1/16	$A5_{17}$	12 15	$4T_{05}$-11	$5M_{15}$-12	
15_{112}	CHN 12 SCANNER VIDEO OUTPUT	CH12 SVO	ANOG	1/16	A534	15 15	$4T_{05}$-29	$5M_{15}$-13	
15_{113}	CHN 13 SCANNER VIDEO OUTPUT	CH13 SVO	ANOG	1/16	$A55_1$	15 33	$4T_{05}$-46	$5M_{15}$-15	
15_{114}	CHN 14 SCANNER VIDEO OUTPUT	CH14 SVO	ANOG	1/16	A364	18 33	$4T_{03}$-05	$5M_{15}$-16	
15_{115}	CHN 15 SCANNER VIDEO OUTPUT	CH15 SVO	ANOG	1/16	$A38_1$	01 34	$4T_{03}$-22	$5M_{15}$-17	
15_{116}	CHN 16 SCANNER VIDEO OUTPUT	CH16 SVO	ANOG	1/16	A398	02 34	$4T_{03}$-39	$5M_{15}$-18	
15_{117}	CHN 17 SCANNER VIDEO OUTPUT	CH17 SVO	ANOG	1/16	$A41_5$	08 34	$4T_{01}$-18	$5M_{15}$-19	
15_{118}	CHN 18 SCANNER VIDEO OUTPUT	CH18 SVO	ANOG	1/16	$A43_2$	10 34	$4T_{01}$-36	$5M_{15}$-37	
15_{119}	CHN 19 SCANNER VIDEO OUTPUT	CH19 SVO	ANOG	1/16	A433	18 69	$4T_{01}$-37	$5M_{15}$-22	
15_{120}	CHN 20_0 SCANNER VIDEO OUTPUT	CH20 SVO	ANOG	1/16	$A45_0$	01 70	$4T_{01}$-55	$5M_{15}$-23	
15_{121}	CHN 21_1 SCANNER VIDEO OUTPUT	CH21 SVO	ANOG	1/16	A467	02 70	$4T_{01}$-72	$5M_{15}$-24	
15_{122}	CHN 22 SCANNER VIDEO OUTPUT	CH22 SVO	ANOG	1/16	A484	08 70	$4T_{07}$-16	$5M_{15}$-25	
15_{123}	CHN 23 SCANNER VIDEO OUTPUT	CH23 SVO	ANOG	1/16	$A5_{01}$	10 70	$4T_{07}$-33	$5M_{15}$-26	
15_{124}	CHN 24 SCANNER VIDEO OUTPUT	CH24 SVO	ANOG	1/16	$A5_{18}$	12 70	$4T_{05}$-12	$5M_{15}$-27	
15_{125}	CHN 25 SCANNER VIDEO OUTPUT	CH25 SVO	ANOG	1/16	A535	18 5_0	$4T_{05}$-3_0	$5M_{15}$-29	
15_{126}	CHN 26 SCANNER VIDEO OUTPUT	CH26 SVO	ANOG	1/16	A569	15 5_0	$4T_{05}$-65	$5M_{15}$-3_0	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	DCS RECIEVER								
$16_{00}1$	RECIEVER 1 SIG STRENGTH	RCVR1 SG	ANOG	1/16	A265	18 15	$4T_{10}-5_0$	$3D_0 4-2$	
$16_{00}2$	RECIEVER 1 TEMPERATURE	RCVR 1 T	ANOG	1/16	A282	1n 24	$4T_{10}-68$	$3D_0 4-1$	
$16_{00}3$	RECIEVER 1 PWR SUPPLY VOLTAGE	RCVR 1 V	ANOG	1/16	A299	12 42	$4T_{14}-12$	$3D_0 4-3$	
$16_{00}4$	RECIEVER 2 SIGNAL STRENGTH	RCVR2 SG	ANOG	1/16	A316	12 51	$4T_{14}-3_0$	$2D_0 4-2$	
$16_{00}5$	RECIEVER 2 TEMPERATURE	RCVR 2 T	ANOG	1/16	A333	18 6n	$4T_{14}-47$	$2D_0 4-1$	
$16_{00}6$	RECIEVER 2 PWR SUPPLY VOLTAGE	RCVR 2 V	ANOG	1/16	$A35_0$	n1 78	$4T_{14}-65$	$2D_0 4-3$	

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*   ELECT. IF S/S = ISM,PSM,APU,ALC   *
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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN	
	INTERFACE SWITCHING MODULE (ISM)									
1008	SCANNER 1 ENA/DIS	SCAN 1	DIG B	1/16	5B13	01 02	4T24-03	$4X_0$5-10	5Z17-05	
1017	SCANNER 2 ENA/DIS	SCAN 2	DIG B	1/16	5B23	18 01	4T09-32	$4X_0$5-12	5Z17-06	5Z10-62
1231	SAD RIGHT POWER UNFUSED/FUSED	SDR PWR	DIG B	1/16	5B14	10 02	4T24-13	$4X_0$5-27	5Z17-12	
1251	SAD LEFT POWER UNFUSED/FUSED	SDL PWR	DIG B	1/16	5B25	08 02	4T11-15	$4X_0$5-25	5Z17-11	5Z10-63
1290	SINGLE SCANNER MODE UNLOCK/LOCK	SGL SCNR	DIG B	1/16	5B10	10 01	4T20-29	$4X_0$5-14	5Z17-07	
1291	SCANNER DISABLE SELECT 2/1	SCAN DIS	DIG B	1/16	5B12	15 01	4T20-50	$4X_0$8-8	5Z17-04	
1292	RIGHT COSINE POT OUT	COS SIGR	ANOG	1/16	A175	02 39	4T06-70	$4X_0$5-16	5Z17-16	
1293	LEFT COSINE POT OUT	COS SIGL	ANOG	1/16	A192	08 39	4T08-14	$4X_0$3-16	5Z17-13	
2020	OA THRUSTER HEATERS ON/OFF	THRS HTR	DIG B	1/16	5B30	01 03	4T17-12	$4X_0$3-27	5Z17-27	5Z10-64
3006	ATTITUDE SENSOR ON/OFF	ATT SENS	DIG B	1/16	5B24	02 02	4T11-05	$4X_0$5-6	5Z17-03	5Z10-65
6102	PSM RELAY BUS ENA/DIS	PSM PLYS	DIG B	1/16	1B29	18 02	4T11-51	$4X_0$3-21	5Z17-26	5Z10-73
7127	COMP. LOAD 7 ON/OFF	CMP LD 7	DIG B	1/16	5B31	08 03	4T17-23	$4X_0$5-4	5Z17-02	5Z10-66
7128	COMP. LOAD 8 ON/OFF	CMP LD 8	DIG B	1/16	5B32	10 03	4T17-34	$4X_0$5-2	5Z17-01	5Z10-67
7130	AUX. LOAD PANEL 1, TEMP.	AUX P1 T	ANOG	1/16	A101	15 06	4T04-32	$4X_0$3-48	5Z17-15	
7131	AUX. LOAD PANEL 2, TEMP.	AUX P2 T	ANOG	1/16	A118	12 24	4T06-11	$4X_0$5-48	5Z17-17	
8060	SEP SWITCH 1 BYPASS NO/YES	SS 1BYPS	DIG B	1/16	5B15	12 02	4T24-23	$4X_0$5-19	5Z17-08	
8061	SEP SWITCH 2 BYPASS NO/YES	SS 2BYPS	DIG B	1/16	5B26	15 02	4T11-25	$4X_0$5-21	5Z17-09	5Z10-68
8062	CLOCK FUSED PWR. PRI/RED	CLK FUSE	DIG B	1/16	5B29	18 02	4T17-02	$4X_0$5-23	5Z17-10	5Z10-69
8113	MSFA STADAN CHANNEL A/B B/A	M S CHN	DIG B	1/16	6B29	18 02	4T17-03	$4X_0$3-19	5Z17-25	5Z10-70
11020	USB XMTR PRIMARY POWER OFF/ON	P USB PW	DIG B	1/16	7B06	15 00	4T16-60	$4X_0$3-12	5Z17-22	
11021	USB XMTR REDUNDANT POWER OFF/ON	R USB PW	DIG B	1/16	1B05	12 00	4T16-44	$4X_0$3-08	5Z17-20	
12000	WIDEBAND POWER AMPLIFIERS PRIMARY POWER OFF/ON	P WPA PW	DIG B	1/16	7B05	12 00	4T16-50	$4X_0$3-14	5Z17-23	
12100	WIDEBAND POWER AMPLIFIERS REDUNDANT POWER OFF/ON	R WPA PW	DIG B	1/16	6B07	18 00	4T16-70	$4X_0$3-10	5Z17-21	
13036	VTR 1 PWR BYPASS OFF/ON	VTR1 BYP	DIG B	1/16	6B16	12 03	4T24-34	$4X_0$9-44	5Z17-51	
13136	VTR 2 PWR BYPASS OFF/ON	VTR2 BYP	DIG B	1/16	9B16	12 03	4T24-37	$4X_1$3-44	5Z17-52	
13210	APU USB/PA R.U.T.SIGNAL ENA/DIS	U/P TSIG	DIG B	1/16	7B07	18 00	4T16-71	$4X_0$3-04	5Z17-18	
14118	CAMERA NO. 1 ON/OFF	CAMERA 1	DIG B	1/16	6B14	10 02	4T24-14	$4X_1$1-42	5Z17-32	
14218	CAMERA NO. 2 ON/OFF	CAMERA 2	DIG B	1/16	2B31	08 03	4T17-20	$4X_1$1-45	5Z17-35	5Z10-71
15001	MSS SYSTEM A ON/OFF	MSS SYSA	DIG B	1/16	8B04	10 00	4T16-40	4X23-41	5Z17-37	
15002	MSS SYSTEM B ON/OFF	MSS SYSB	DIG B	1/16	8B05	12 00	4T16-51	$4X_0$1-42	5Z17-29	
15032	MSS MAG COMP ON/OFF	MSS MAG	DIG B	1/16	5B05	12 00	4T16-48	4X21-44	5Z17-53	
	ISM SPARE =4		DIG B	1/16	5B20	02 03	4T09-01	$4X_0$3-2	5Z17-24	5Z10-72

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FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN	
	POWER SWITCHING MODULE (PSM)									
2_{03_0}	DA SOL POWER ENA/DIS	SOL PWR	DIG B	1/1	5B19	16 04	4T24-63	5P13-12	5Z15-13	
2_{03_5}	DA TIMER ENA/DIS	DA TIMER	DIG B	1/16	5B16	12 03	4T24-33	5P13-26	5Z15-01	
6_{07_9}	PAYLOAD FUSE BLOW BUS VOLTAGE	FS BLO V	ANLG	1/16	A135	15 42	4T06-29	5P13-10	5Z15-11	
6_{10_1}	PRM IA RELAY CONFIGUR. MIXED/COMM	PRM AGF	DIG B	1/16	6B12	15 01	4T20-51	5P13-32	5Z15-12	
6_{10_2}	PSM RELAY BUS ENA/DIS	SEE ISM								
11_{02_2}	USB XMTRS OFF SIG ENA/DIS	USB OFF	DIG B	1/16	7B03	08 00	4T16-29	5P19-48	5Z15-04	
13_{03_5}	VTR 1 CONTROL NORM/REVERSED	VTR 1 CON	DIG B	1/16	1B01	01 00	4T16-02	5P13-31	5Z15-08	
13_{13_5}	VTR 2 CONTROL NORM/REVERSED	VTR 2 CON	DIG B	1/16	1B09	02 01	4T20-15	5P13-41	5Z15-49	
13_{26_9}	APU PAYLOAD B.U.T. SIG ENA/DIS	PL TSIG	DIG B	1/16	7B09	02 01	4T20-21	5P13-04	5Z15-09	
13_{21_1}	SEARCH TRACK (1+2) DATA TO APU (A+B) NORM/SWITCHED	ST DATA	DIG B	1/16	7B08	01 01	4T20-10	5P13-08	5Z15-06	
14_{01_7}	RBV SHUTTER PWR ON/OFF	SHTR PWR	DIG B	1/16	5B11	12 01	4T20-39	5P13-23	5Z15-07	
14_{01_8}	RBV PRIMARY CONTROL ENA/DIS	RBV PCON	DIG B	1/16	1B25	08 02	4T11-11	5P13-49	SPLICE	
14_{12_1}	RBV 1 THERMOELECTRIC MOD ENA/DIS	THM MD 1	DIG B	1/16	7B04	10 00	4T16-39	5P13-35	5Z15-05	
14_{22_1}	RBV 2 THERMOELECTRIC MOD ENA/DIS	THM MD 2	DIG B	1/16	7B01	01 00	4T16-08	5P13-46	5Z15-02	
15_{00_0}	MSS POWER ENABLE/DISABLE	MSS PWR	DIG B	1/16	7B22	08 01	4T09-24	5P13-47	5Z15-10	5Z10-74
15_{03_8}	MSS HEATER ON/OFF	MSS HTR	DIG B	1/16	7B02	02 00	4T16-19	5P13-38	5Z15-03	
	PSM SPARE =1		DIG B	1/16	5B01	01 00	4T16-06	5P19-12	5Z15-32	
	PSM SPARE =2		DIG B	1/16	8B03	08 00	4T16-30	5P19-24	5Z15-47	
	PSM SPARE =3		DIG B	1/16	0B15	12 02	4T24-18	5P19-36	5Z15-14	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	AUX PROCESSING UNIT (APU)								
132_{00}	-24.5 INPUT POWER	APU-24.5	ANOG	1/16	A11 6	18 5_1	$4T_06$-09	$3E_06$-13	
132_{01}	-12V SUPPLY	AOU -12V	ANOG	1/16	$A15_0$	01 6_1	$4T_06$-44	$3E_06$-15	
132_{02}	TEMPERATURE	APU TEMP	ANOG	1/16	A167	02 78	$4T_06$-62	$3F_06$-14	
132_{07}	34 MIN. PL B.U.T. START SIG. ON/OFF	34M PL	DIG B	1/16	7B10	10 01	$4T_20$-3_1	$3E_06$-04	
132_{08}	34 MINUTE USB/PA B.U.T. START SIGNAL ON/OFF	34M U/PA	DIG B	1/16	7B11	12 01	$4T_20$-4_1	$3E_06$-07	
132_{09}	APU PAYLOAD B.U.T. SIG ENA/DIS	SEE PSM							
132_{10}	APU USB/PA B.U.T. SIG ENA/DIS	SEE PSM							
132_{11}	SEARCH TRACK TO APU NORM/SWITCHED	SEE PSM							
132_{12}	POWER MODE NORM/STBY	PWR MODE	DIG B	1/16	1B10	10 01	$4T_20$-25	$3E_06$-16	
17_{000}	SEARCH TRACK 1, 1/2 DATA	STK1 1/2	DIG A	1/1	DA_01	16 00	4T28-01	$3E_04$-09	
17_{001}	SEARCH TRACK 1, 2/2 DATA	STK1 2/2	DIG A	1/1	DA_02	17 00	4T28-09	$3E_04$-10	
17_{002}	SEARCH TRACK 2, 1/2 DATA	STK2 1/2	DIG A	1/1	DA_03	16 01	4T28-18	$3E_04$-11	
17_{003}	SEARCH TRACK 2, 2/2 DATA	STK2 2/2	DIG A	1/1	DA_04	17 01	4T28-26	$3F_04$-12	

FUNC NO.	TLM FUNCTION	ACRONYM	SIGNL TYPE	SAMP SEC	GATE ADDR	COLUMN /ROW	VIP CONN	S/S CONN	INT CONN
	AUX LOAD CONTROLLER (ALC)								
$6_{0}80$	SHUNT LOAD 1 CURRENT	SHUNT1 I	ANOG	1/16	$A25_{1}$	08 09	$4T10-36$	1P42-05	
$6_{0}81$	SHUNT LOAD 2 CURRENT	SHUNT2 I	ANOG	1/16	A268	10 18	$4T10-54$	1P42-06	
$6_{0}82$	SHUNT LOAD 3 CURRENT	SHUNT3 I	ANOG	1/16	A285	12 27	$4T10-7_{1}$	1P42-07	
$6_{0}83$	SHUNT LOAD 4 CURRENT	SHUNT4 I	ANOG	1/16	$A3_{0}2$	1^{5} 36	$4T14-1^{5}$	1P42-18	
$6_{0}84$	SHUNT LOAD 5 CURRENT	SHUNT5 I	ANOG	1/16	A319	18 45	4T14-33	1P42-19	
$6_{0}85$	SHUNT LOAD 6 CURRENT	SHUNT6 I	ANOG	1/16	A336	01 55	$4T14-5_{0}$	$1P42-2_{0}$	
$6_{0}86$	SHUNT LOAD 7 CURRENT	SHUNT7 I	ANOG	1/16	A337	02 64	$4T14-5_{1}$	1P42-08	
$6_{0}87$	SHUNT LOAD 8 CURRENT	SHUNT8 I	ANOG	1/16	A354	08 73	4T14-69	$1P42-2_{1}$	
$6_{0}89$	SHUNT LOAD A ON/OFF	SHUNT A	DIG B	1/16	0B01	01 00	4T16-01	1P42-39	
$6_{0}9_{0}$	SHUNT LOAD B ON/OFF	SHUNT B	DIG B	1/16	0B08	01 01	$4T2_{0}-03$	1P42-02	
$6_{0}91$	SHUNT LOAD C ON/OFF	SHUNT C	DIG B	1/16	0B13	01 02	$4T2_{0}-55$	1P42-01	
$6_{0}92$	SHUNT LOAD D ON/OFF	SHUNT D	DIG B	1/16	$0B3_{0}$	01 03	4T17-07	1P42-42	$5Z_{10}-75$
$6_{0}93$	AUXILIARY LOAD 1 ON/OFF	AUX LD 1	DIG B	1/16	$0B_{0}2$	02 00	4T16-12	1P42-03	
$6_{0}94$	AUXILIARY LOAD 2 ON/OFF	AUX LD 2	DIG B	1/16	0B09	02 01	$4T2_{0}-14$	1P42-04	
$6_{0}95$	AUXILIARY LOAD 3 ON/OFF	AUX LD 3	DIG B	1/16	0B24	02 02	$4T_{0}9-37$	1P42-36	$5Z_{10}-76$
$6_{0}96$	AUXILIARY LOAD 4 ON/OFF	AUX LD 4	DIG B	1/16	$0B2_{0}$	02 03	4T24-68	1P42-37	
$6_{0}97$	AUXILIARY LOAD 5 ON/OFF	AUX LD 5	DIG B	1/16	0B32	10 03	4T17-28	1P42-38	$5Z_{10}-77$
7_{121}	COMP LOAD 1 ON/OFF	CMP LD 1	DIG B	1/16	7B12	15 01	$4T2_{0}-52$	1P42-09	
7_{122}	COMP LOAD 2 ON/OFF	CMP LD 2	DIG B	1/16	7B13	01 02	$4T24-0^{5}$	1P42-27	
7_{123}	COMP LOAD 3 ON/OFF	CMP LD 3	DIG B	1/16	7B24	02 02	$4T11-0^{7}$	1P42-28	$5Z_{10}-78$
7_{124}	COMP LOAD 4 ON/OFF	CMP LD 4	DIG B	1/16	7B25	08 02	4T11-17	1P42-22	$5Z_{10}-79$
7_{125}	COMP LOAD 5 ON/OFF	CMP LD 5	DIG B	1/16	7B14	10 02	4T24-15	1P42-23	
7_{126}	COMP LOAD 6 ON/OFF	CMP LD 6	DIG B	1/16	7B15	12 02	4T24-25	1P42-24	
7_{127}	COMP LOAD 7 ON/OFF	SEE ISM							
7_{128}	COMP LOAD 8 ON/OFF	SEE ISM							
$8_{0}57$	TICK/TOCK TIC/TOC	TIC/TOC	DIG B	1/1	9B18	17 0^{3}	4T24-57	1P42-25	

APPENDIX D

TYPICAL STRIP CHART PAYLOAD SIGNATURES

Figures D-1, D-2 and D-3 are strip charts (General Status 2 display) showing characteristic signatures of payload equipment. D-1 is from a 1 kilobit real time pass and D-2 and D-3 are from a 24 kilobit playback from the onboard Narrow Band Recorder. The 17 pens are alternately analog (8 each) and digital (9 each). The parameter values drawn by each pen are shown on the General Status 2 overlay.

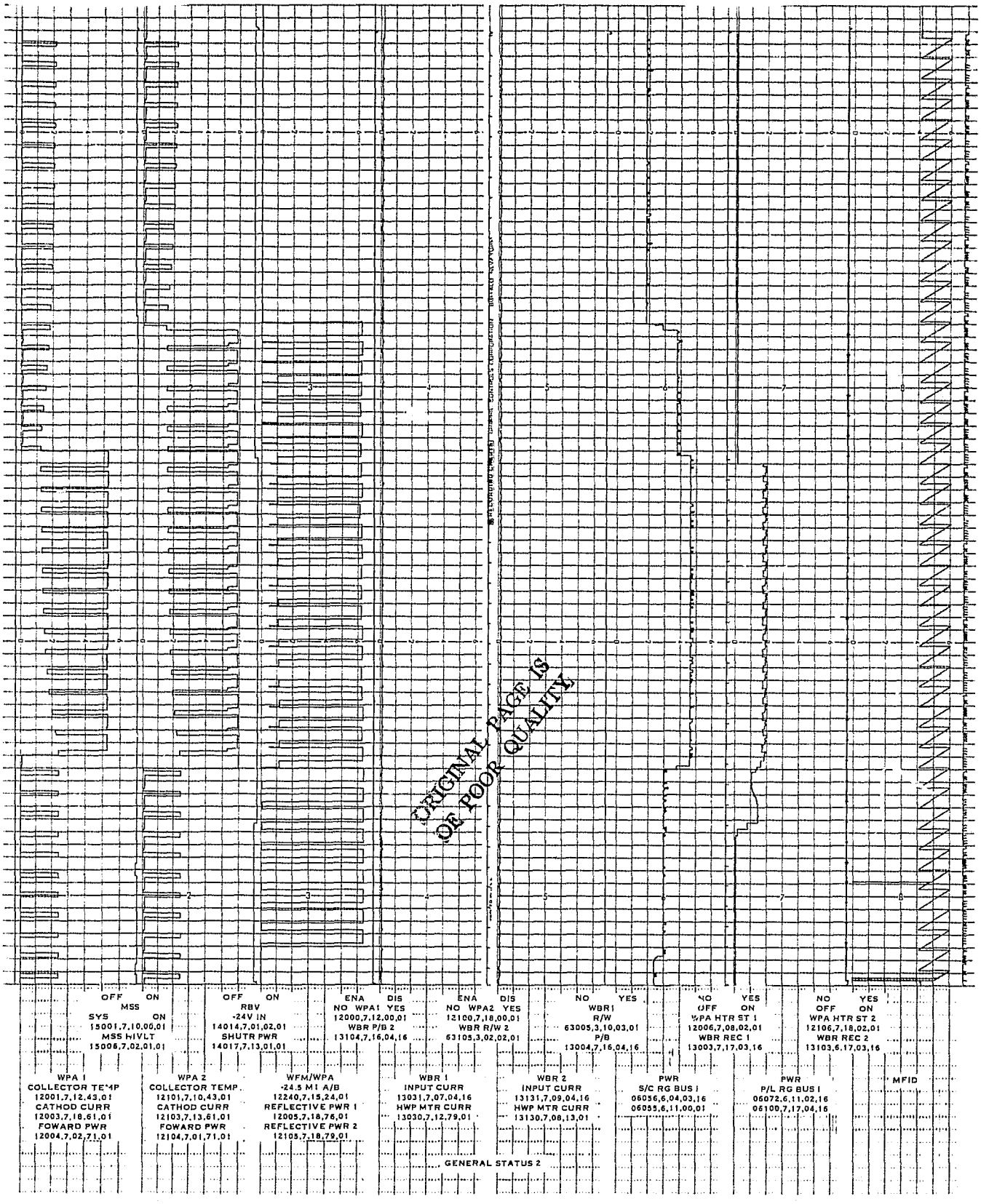

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Figure D-1

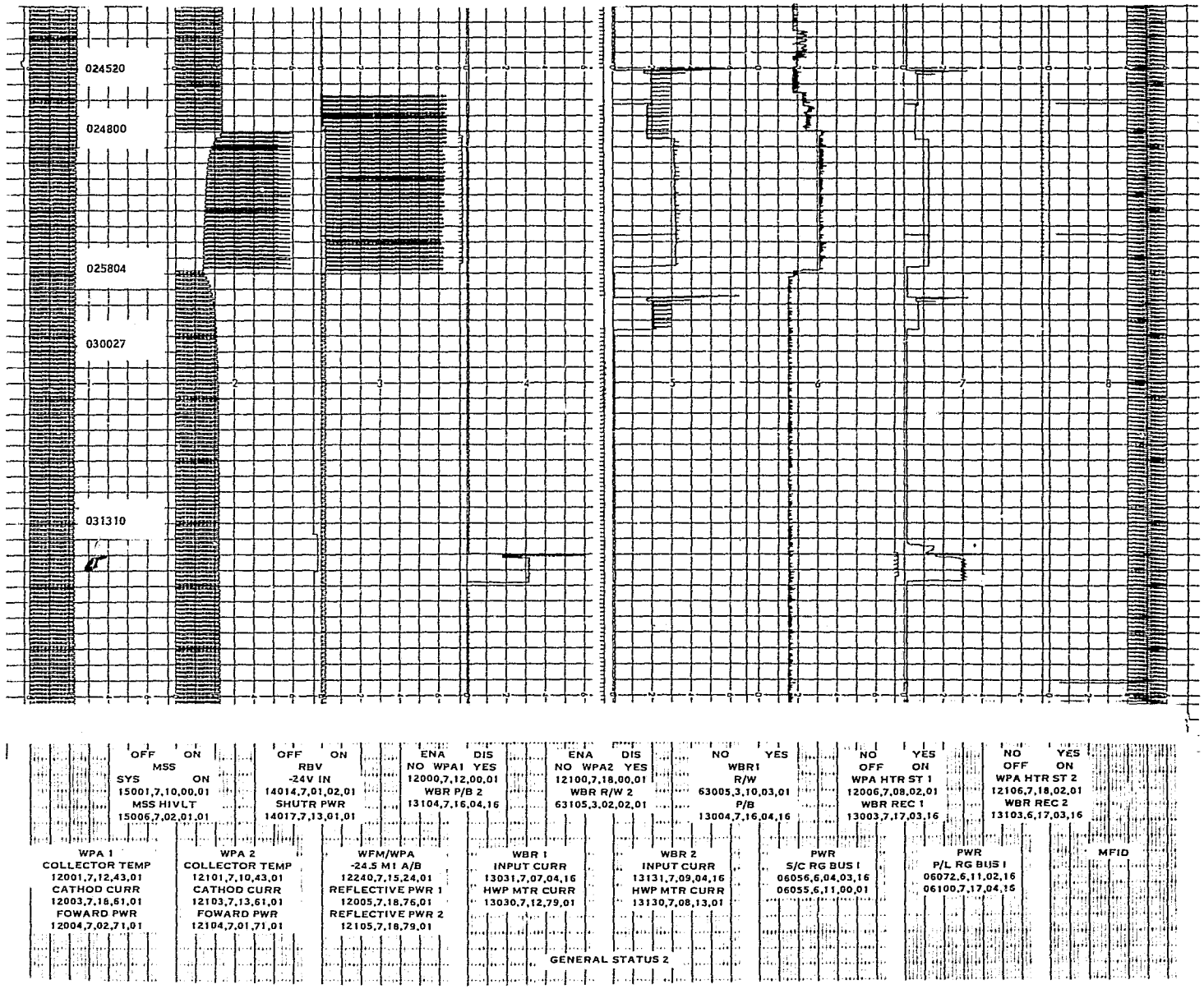

Figure D-2

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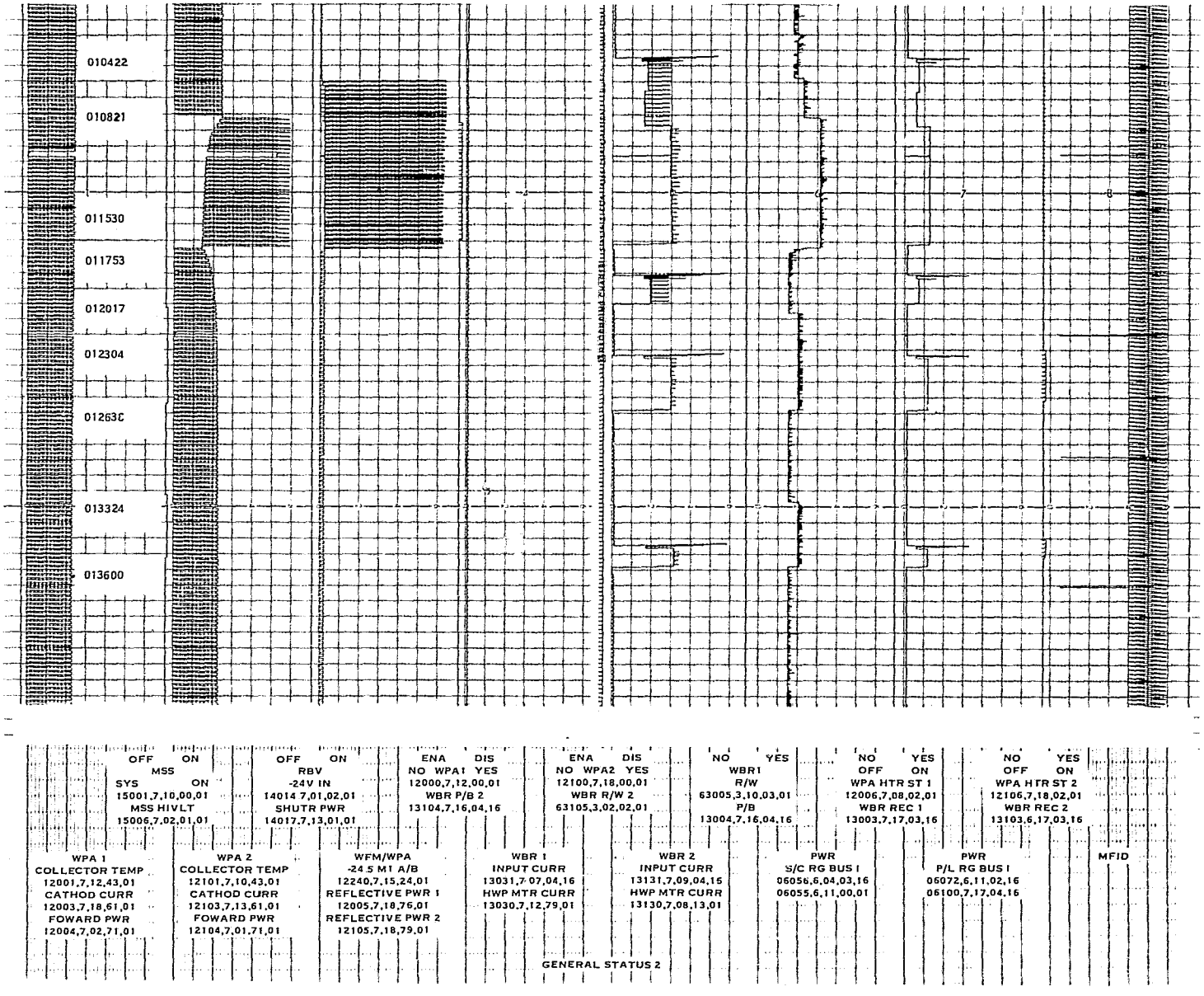
010422
010821
011530
011753
012017
012304
012630
013324
013600
OFF ON
MSS SYS ON
15001,7,10,00,01
MSS HIVLT
15006,7,02,01,01
OFF ON
RBV -24V IN
14014,7,01,02,01
SHUTR PWR
14017,7,13,01,01
ENA DIS
NO WPA1 YES
12000,7,12,00,01
WBR P/B 2
13104,7,16,04,16
ENA DIS
NO WPA2 YES
12100,7,18,00,01
WBR R/W 2
63105,3,02,02,01
NO YES
WBR1 R/W
63005,3,10,03,01
P/B
13004,7,16,04,16
NO YES
OFF ON
WPA HTR ST 1
12006,7,08,02,01
WBR REC 1
13003,7,17,03,16
NO YES
OFF ON
WPA HTR ST 2
12106,7,18,02,01
WBR REC 2
13103,6,17,03,16
WPA 1
COLLECTOR TEMP
12001,7,12,43,01
CATHOD CURR
12003,7,18,61,01
FOWARD PWR
12004,7,02,71,01
WPA 2
COLLECTOR TEMP
12101,7,10,43,01
CATHOD CURR
12103,7,13,61,01
FOWARD PWR
12104,7,01,71,01
WFM/WPA
-24.5 M1 A/B
12240,7,15,24,01
REFLECTIVE PWR 1
12005,7,18,76,01
REFLECTIVE PWR 2
12105,7,18,79,01
WBR 1
INPUT CURR
13031,7,07,04,16
HWP MTR CURR
13030,7,12,79,01
WBR 2
INPUT CURR
13131,7,09,04,15
HWP MTR CURR
13130,7,08,13,01
PWR
S/C RG BUS 1
06056,6,04,03,16
06055,6,11,00,01
PWR
P/L RG BUS 1
06072,6,11,02,16
06100,7,17,04,16
MFID
GENERAL STATUS 2

Figure D-3

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W. A. FRANKLIN RBV S/S Engineer	G. J. EHRGOTT LANDSAT Elec. Sys. Engr.

DATE SENT	DATE INFO. REQUIRED	PROJECT AND REQ. NO.	REFERENCE DIR. NO.
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SUBJECT

RBV ANOMALY SUMMARY

INFORMATION REQUESTED/RELEASED

I. INTRODUCTION

During spacecraft system tests prior to and during thermal/vacuum, two significant RBV anomalies were encountered:

1. CAL 1 and CAL 2 calibration levels for camera 2 were at times higher than normal.

2. The CCC composite video output occasionally contained an 800 KHz signal during the RBV 50-second warmup period instead of the normal reference black signal.

A summary of the cause of the anomalies, prepared by RCA, is appended to this PIR.

II. DISCUSSION

A meeting was held at NASA/GSFC on 14 July to discuss the anomalies, probable causes, "fix" options, and the impact on RBV and the spacecraft associated with taking/not taking corrective action. The general conclusion was that no corrective action would be taken.

A. Calibration Level Anomaly

The increase in the camera 2 calibration levels was first identified during pre-pumpdown tests with the spacecraft in the vacuum chamber, with subsequent occurrences under vacuum conditions.

After following several false trails, it was noted that the anomaly occurred only when the spacecraft battery voltages were below a certain value. The eight spacecraft batteries are tied together (through diodes) to form the Pulse Load bus which provides unregulated voltage to certain RBV circuits. Armed with this information, RCA was able to duplicate the anomaly using the design qualification model RBV.

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The following facts were presented at the meeting:

1. Power demand (and consequent drain on the batteries) is greater during test orbits at GE than will be encountered in flight operation. During test orbits both wideband power amplifiers, both wideband video tape recorders, and MSS are ON during the RBV ON period. Since this mode of operation will seldom, if ever, be encountered in flight, power management practices by flight operations personnel should always keep the battery voltages above the value required to cause the anomaly.

2. RCA feels the increased voltage on the erase lamps during the anomaly is well under the lamp voltage rating and will not shorten lamp life. Failure of the lamps will not cause damage to the RBV. The calibration feature would be lost, but the effect of losing the erase function due to lamp failure would be hard to see in the video data.

For these reasons it was decided that no corrective action would be taken unless the RBV camera electronics modules required removal from the spacecraft for some other reason, at which time the "fix" would be incorporated.

B. 800 KHz Anomaly

At the time of the meeting, the frequency of the signal appearing in the composite video had not been identified. Subsequently, the anomaly occurred for the third time and the frequency identified as 800 KHz. With this information, RCA was able to identify the cause of the problem. Since the signal occurs randomly, and since there is no possibility that it can occur during readout of video from a scene, it was decided that no corrective action is required.

III. EFFECTS ON FLIGHT OPERATION

Flight operations personnel should be made aware that both anomalies may occur in orbit, but there should be no cause for alarm. If the voltage conditions are correct (lower than V_B=29 volts), the calibration levels for camera 2 may be high during a calibration cycle. If the 800 KH_Z signal appears in the composite video data after RBV turn-on, it will disappear after the 50-second warmup period and all video thereafter will be normal.

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APPENDIX I

RBV ANOMALY SUMMARY BY RCA

RBV ANOMALY SUMMARY

I. INTRODUCTION

During integration and test at GE, two RBV anomalies were uncovered: the calibration level anomaly and the CCC anomaly. Because of the nature and the low frequency of occurrence of these anomalies, it has been decided that no corrective action is required.

II. CALIBRATION LEVEL ANOMALY

This anomaly manifested itself in Camera 2 (S/N 103) as a significantly increased video level during the calibration cycle at various times during testing at GE. Only Cal 1 (near black) and Cal 2 (near white) increased in level; during the occurrence of the anomaly, Cal 1 increased from about 0.32V to 0.45V and Cal 2 increased from about 0.70 volts to about 0.95 volts. Camera 2 black video level and highlight brightness video level remained normal. In addition, the anomaly was not observed in Camera 1. This indicated that the source of the anomaly was the erase lamp circuitry. Furthermore, a review of GE test data indicated that the anomaly was never observed when the battery voltage was greater than about 29 volts, and the anomaly was always observed when the battery voltage was less than about 28 volts; in between 28 and 29 volts, anomaly occurred randomly. Note, the battery voltage is a diode drop ($\approx$0.6 volts) greater than the pulse load bus which supplies power to the erase lamp circuitry.

Based upon tests and analysis at RCA, together with the preceding observations, it has been determined that this anomaly is caused by a supply-voltage dependent parasitic oscillation in the erase lamp circuit; a low level oscillation voltage is added to the erase lamp voltage pulse causing a small increase

in the effective light output sufficient to produce the observed calibration level increase. This anomaly is correctable by inserting a 150Ω parasitic suppressor resistor in the base lead of the erase lamp drive transistor. This could be accomplished by removing each camera electronics from the spacecraft, removing the camera electronics bottom cover, and incorporating the resistor into the harness board wiring.

During in-orbit RBV operation, it would not be necessary to use the calibration on a regular basis. Also, because of operational power management, the schedule for using the calibration feature could readily be planned to minimize the possibility of the anomaly occuring. Furthermore, should the unlikely possibility of this anomaly causing premature failure of an erase lamp circuit component occur, loss of the erase lamp function is not catastrophic; there is no longer a calibration function, but the effect is hardly noticeable during normal picture taking.

Therefore, it was decided that the modification would not be incorporated unless it was necessary to remove the camera electronics units for another reason. In addition, it was recommended that the erase lamp test points of each camera be monitored to determine the existence, duration, and magnitude of the oscillation; this test will be performed when and if the spacecraft insulation in the vicinity of the camera electronics units is removed for some other reason.

III. CCC ANOMALY

The manifestation of this anomaly is the insertion of 800 kHz (originally thought to be 1.6 MHz) into the CCC signal output during the 50-second warmup interval; normally, the CCC output contains black level information during warmup. Thus far, this anomaly has occurred about three times during GE testing out of about 140 normal turn-ons; this anomaly was never seen during RCA testing.

A review of the CCC logic has indicated that the 800 kHz signal ($\Delta 1$ interval signal) can appear during warmup in the CCC output on a random basis. This is because there is no power-on reset for the flip flop controlling the $\Delta 1$ interval, thus allowing it to enter, on a random basis, either the enable or the disable state at turn-on; this flip flop is not initially reset until the beginning of the interval in which the CCC logic rephases to the spacecraft 1-Hz clock (which occurs at the end of warm-up).

It should be stressed that the RBV logic design is such that the random 800 kHz signal can occur only during the warmup interval, and not during the active operation time.

Thus, it will not affect RBV operation or ground data usage, and no further action is required.

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G. Quanbeck Vehicle Engineering	W. Downs, Manager Vehicle Integration

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SUBJECT

LDST-C Orbit Adjust Thruster Alignment Data

INFORMATION REQUESTED/RELEASED

The final check of alignment data for the Orbit Adjust Thrusters are shown schematically on attached Figure 1. The coordinates shown are to the center of the alignment target, not to the center of thruster exit plane.

The S/C C.G. coordinates used for aligning the nozzles were determined by averaging the C.G. coordinates for each of the following conditions:

Full fuel, array at 1200 hours = (1.389,0.516,203.265)
Full fuel, array at 0600 hours = (1.369,0.516,203.244)
50% fuel, array at 1200 hours = (1.413,0.525,203.417)
50% fuel, array at 0600 hours = (1.393,0.525,203.396)

The average C.G. = (1.391,0.521,203.331).

During the check of alignment, the S/C separation plane (Station 221.00) is used as the datum for height measurements and the C.G. coordinates are shown as (1.391,0.521,17.669) on Figure 1.

LDST-C
P. Perez - M7203
NASA/GE: T. Saskiewicz, Bldg. 23, Code 430.2, Rm. W309
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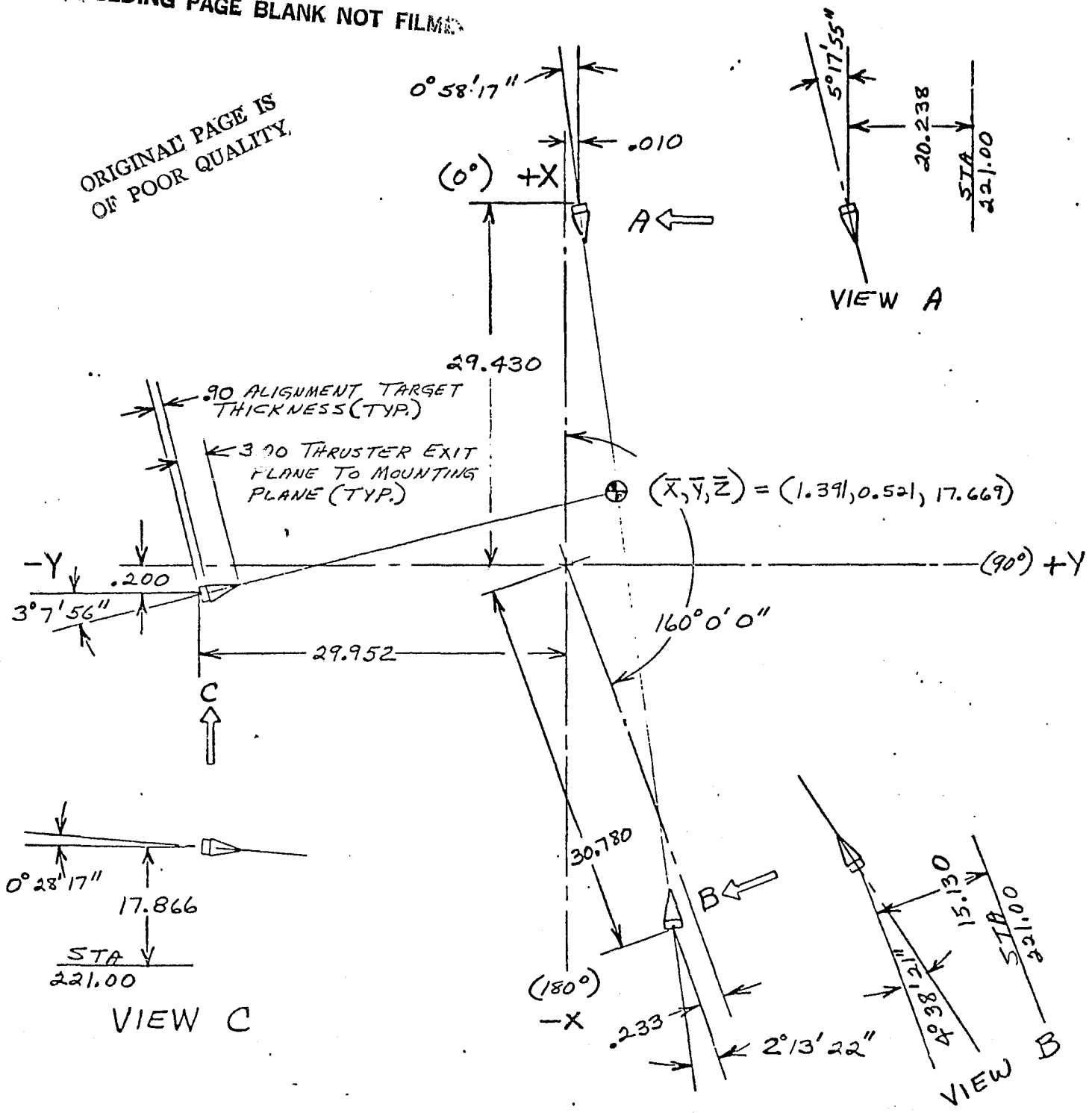

FIGURE 1. LOST C ORBIT ADJUST THRUSTER LOCATIONS AND POINTING ANGLES. (12/9/77 DATA)